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THESIS

**U.S. PROLIFERATION POLICY AND THE CAMPAIGN
AGAINST TRANSNATIONAL TERROR: LINKING THE
U.S. NON-PROLIFERATION REGIME TO HOMELAND
SECURITY EFFORTS**

by

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December 2013

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TRANSNATIONAL TERROR: LINKING THE U.S. NON-PROLIFERATION
REGIME TO HOMELAND SECURITY EFFORTS**

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ABSTRACT

The non-proliferation treaty regime the international community has utilized for over half a century is insufficient to combat emerging global threats, specifically, WMD terrorism. The current landscape of transnational terrorism requires a major shift in U.S. nonproliferation policies if the current regime is going to address WMD threats and the proliferation of weapons and materials by non-state actors adequately. From a policy perspective, nonproliferation and counterterrorism still largely operate as separate and distinct missions which creates a disconnect that can be exploited. Recent efforts have been instituted in an attempt to fill gaps but they still fall short because these measures operate in the absence of an overarching international framework, which results in the failure to capture fully the integration of the convergence of issues in the fields of counter-proliferation transnational terrorism, and weapons of mass destruction. This thesis explores how the traditional non-proliferation policy regime can be connected to domestic homeland security efforts as an effective counter-terrorism strategy. It recommends a modern policy approach, including leveraging the non-proliferation framework already in existence, by supplementing with efforts to combat international criminal networks and overarching counterterrorism objectives to keep pace with current threats.

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LIST OF ACRONYMS AND ABBREVIATIONS

BENS	Business Executives for National Security
BW	Biological Weapons
BWC	Biological Weapons Convention
BTWC	Biological and Toxins Weapons Convention
CBRN(E)	Chemical, Biological, Radiological, Nuclear (High-Yield Explosive)
CIA	Central Intelligence Agency
CBW	Chemical Biological Weapons
CNS	Center for Nonproliferation Studies
CTR	Cooperative Threat Reduction Program
CWC	Chemical Weapons Convention
DCI	Director of Central Intelligence
DHS	Department of Homeland Security
DIA	Department of Defense Intelligence Agency
DNI	Director of National Intelligence
DoD	Department of Defense
DOJ	Department of Justice
DNDO	Domestic Nuclear Detection Office
DPRK	Democratic People's Republic of Korea
ETA	Euskadi Ta Askatasuna
FBI	Federal Bureau of Investigation
FSU	Former Soviet Union
GAO	Government Accountability Office
GNDAs	Global Nuclear Detection Architecture
GTRI	Global Threat Reduction Initiative
HEU	Highly Enriched Uranium
HSC	Homeland Security Council
IAEA	International Atomic Energy Agency
IED	Improvised Explosive Device
IND	Improvised Nuclear Device
IRA	Irish Republican Army
MIIS	Monterey Institute of International Studies
MTCR	Missile Technology Control Regime

NBC	Nuclear, Biological, Chemical
NATO	North Atlantic Treaty Organization
NCPC	National Counter Proliferation Center
NCTC	National Counterterrorism Center
NIE	National Intelligence Estimate
NIPC	National Infrastructure Protection Center
NPR	Nuclear Posture Review
NPT	Non-proliferation Treaty
NNSA	National Nuclear Security Administration
NWS	Nuclear Weapons State
NNWS	Non-Nuclear Weapons State
NSC	National Security Council
OPCW	Organization for the Prohibition of Chemical Weapons
PSA	Partnership for a Secure America
PSI	Proliferation Security Initiative
PFLP	Popular Front for the Liberation of Palestine
RDD	Radiological Dispersal Device
SMN	Special Nuclear Material
START	Strategic Arms Reduction Treaty
UN	United Nations
WMD	Weapons of Mass Destruction

EXECUTIVE SUMMARY

Since its inception, the non-proliferation policy regime has focused on preventing the emergence of new nuclear nations; however, the old paradigm of nation state confrontation is no longer the only threat. The non-proliferation treaty regime that the international community has utilized for over half a century is insufficient to combat emerging global threats, specifically, WMD terrorism. The current landscape of transnational terrorism requires a major shift in U.S. non-proliferation policies if the current regime is going to address WMD threats and the proliferation of weapons and materials by non-state actors adequately.

Recent efforts have been instituted in an attempt to fill gaps but they still fall short because these measures operate in the absence of an overarching international framework that results in the failure to capture the integration of the convergence of issues in the fields of counterproliferation and terrorism fully.

It appears as if a considerable gap exists between the theoretical aspects of the non-proliferation regime and its application for preventing WMD terrorism. Non-proliferation scholars and terrorist experts approach the threat very differently—from a nation-state paradigm based in theory and international norms vs. a criminal threat based in criminality and domestic security. Issues of WMD terrorism and nonproliferation are stove-piped and approach the issues as “cause” and “effect,” rather than different sides of the same coin. From a policy perspective, nonproliferation and counterterrorism still largely operate as separate and distinct missions that create a disconnect that can be exploited.

Proliferation challenges are growing increasingly more complex. WMD terrorism is a growing threat fueled by broader trends of the 21st century. The rise of transnational terrorism, emerging patterns in extremism, and the impacts of globalization, have all lead to an increasingly complex environment. Attention to the potential of a catastrophic attack using WMD is driven in part by specific incidents, such as the 1995 Aum Shinrikyo sarin nerve gas attack, evidence of Al-Qaeda’s desire to develop nuclear

capabilities and chemical and biological weaponry, and the discovery of the A.Q. Kahn network. These incidents were significant in demonstrating the convergence of issues in the fields of counterproliferation, transnational terrorism, and weapons of mass destruction.

The central limitation of using the current arms control regime to prevent terrorists from acquiring weapons of mass destruction is that treaties proscribe and prohibit the activities of states, not sub-national groups. They focus on thwarting proliferation between states and provide only limited value for preventing the proliferation of weapons and weapons materials to terrorists and other sub-state entities. Non-proliferation measures, cooperative threat reduction, and other arms control initiatives can help limit the opportunities for terrorists to acquire or develop WMD if written consciously to acknowledge and account for the risks of terrorism. Coupling international protocols with domestic security initiatives may provide a greater defense than either protocols or detection programs alone.

In an attempt to address the increasing threat of WMD terrorism, the next generation of non-proliferation instruments must address trading, smuggling, and trafficking of WMD related materials.

Two new mechanisms, the Pacific Security Initiative (PSI) and United Nations Resolution 1540, have been instituted in an attempt to fill gaps in the existing non-proliferation regime. However, these efforts have thus far fallen short by failing to capture the integration of the enforcement mission (criminal) into the non-proliferation regime (diplomatic) fully. Implementation issues further hamper their effectiveness. The result is a failure to bridge the gap in the fields of WMD counter-proliferation of WMD and terrorism fully.

In a struggle to limit the spread of WMD, every available tool in the U.S. security arsenal must be used and linked to a comprehensive strategy that will help prevent individual actors from developing or using WMD capabilities. Bridging the gap between diplomatic protocols and the law enforcement efforts will lead to a systematic approach in counterterrorism; thereby, closing critical gaps.

This thesis examines how the traditional non-proliferation policy regime can be connected to domestic homeland security efforts as an effective counterterrorism strategy. It explores how the non-proliferation policy regime can be more connected to domestic homeland security efforts as an effective counterterrorism strategy and how international/domestic protocols can be revised to include the role of non-state actors.

Ultimately, this thesis recommends a modern policy approach, including leveraging the non-proliferation framework already in existence, by supplementing with efforts to combat international criminal networks and overarching counterterrorism objectives to keep pace with current threats. Solutions to this new WMD threat may look unconventional to the non-proliferation regime but these additions will make all elements across the spectrum of approaches more effective. A need exists to accelerate the integration of effort among the counterproliferation, counterterrorism, and law enforcement communities to address WMD proliferation and terrorism issues to strengthen and modernize the non-proliferation regime to deal with the WMD threats of the 21st century.

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Addison, I hope this proves to you that “girls can do anything.” May you always follow your hearts to one day achieve your own dreams.

And finally, for my Dad. I hope you would be proud. This one is for you ...

I. MAKING NON-PROLIFERATION POLICIES RELEVANT TO THE CAMPAIGN AGAINST TERRORISM

The greatest danger of another catastrophic attack on the United States will materialize if the world's most dangerous terrorists acquire the world's most dangerous weapons.

– 9/11 Commission Report¹

The non-proliferation regime began under the Cold War era when enemies were clearly defined, theory rational, and catastrophic threats involved other nation-states. The reduction of nuclear stockpiles and 9/11 have “stilled the former apocalyptic vision of the end of human kind resulting from interstate and intercontinental nuclear warfare and replaced them by a rise in concerns about individual acts of nuclear terrorism.”² However, the non-proliferation regime, which grew out of the Cold War, has not modernized to keep pace with the threats. Nonproliferation and counterterrorism still largely operate as separate fields, which misses an opportunity to maximize efforts to prevent weapons of mass destruction (WMD) attacks.

Attention to the potential of a catastrophic attack using WMD is driven in part by specific incidents, such as the 1995 Aum Shinrikyo sarin nerve gas attack,³ evidence of Al-Qaeda's desire to develop nuclear capabilities⁴ and chemical and biological weaponry, and the discovery of the Abdul Qadeer Khan network (A.Q. Khan).⁵ These incidents were significant in demonstrating the convergence of issues in the fields of counterproliferation of WMD and terrorism.

¹ National Commission on Terrorist Attacks Upon the United States, *Final Report of the National Commission on Terrorist Attacks Upon the United States (9/11 Commission Report)*, July 22, 2004, 380.

² John Simpson, “WMD Terrorism.” in *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy*, eds. Nathan E. Busch and Daniel H. Joyner (Athens, GA: University of Georgia Press, 2009), 46.

³ See Sarah Daly, John Parchini, and William Rosenau, Aum Shrinkyo, *al Qaeda and the Kimshasha Reactor*, Project Air Force, RAND Corporation, 2005.

⁴ See Rolf Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, Belfer Center for Science and International Affairs, Harvard Kennedy School, January 2011.

⁵ David Albright and Simon Hinderstein, “Unraveling the A.Q. Khan Network and Future Proliferation Networks,” *Washington Quarterly* 28, no. 2 (2005): 111–128.

Proliferation challenges are now much more complex. WMD terrorism is a growing threat fueled by broader trends of the 21st century, including emerging patterns in extremism and globalization in an increasingly complex environment. The increasing convergence of issues of terrorism, proliferation, and WMD issues highlighted in this chapter are fueling the odds of WMD terrorism occurring and making it increasingly difficult to detect the threats. An increasing number of rogue nations pursuing illicit weapons programs, the expansion of nuclear energy programs, and several weak or failing states add to the problem. The transnational terrorists' threat and complicated proliferation networks faced today are a very different enemy than that faced just over a decade ago. The complex world, in which they thrive, is also very different. These groups are both a "product" and "beneficiary" of globalization. If policy makers and intelligence want to be able to interdict and stop the behavior, it is necessary to exploit the same opportunities criminal networks and non-state actors have been able to. It is absolutely essential to think differently about the threats facing this nation.

A need exists to accelerate the integration of effort among the counterproliferation, counterterrorism, and law enforcement communities to address WMD proliferation and terrorism issues in order to strengthen and modernize the non-proliferation regime to deal with the WMD threats of the 21st century.

A. EFFORTS TO DEAL WITH ISSUES OF PROLIFERATION AND TERRORISM

The history of the proliferation threat (and how it is dealt with) and its link to terrorism has differed greatly with changing international circumstances. The fall of the Soviet Union and the end of the Cold War dramatically changed the security environment but also created unintended consequences. In the midst of chaos following the dissolution of the Soviet Union were "loose nukes," and nuclear material. Fears were great that terrorists may be able to gain access to dangerous weapons/and or materials. Then, the United States led the international community by introducing the Nunn-Lugar, a Comprehensive Threat Reduction Program.⁶ This program targeted the security of

⁶ In November 1991, Senator Lugar (R-IN) and former Senator Sam Nunn (D-GA) authored the Nunn-Lugar Act, which established the Cooperative Threat Reduction Program.

nuclear the stockpile by providing U.S. funding and expertise to help the former Soviet Union safeguard and dismantle its enormous stockpiles of nuclear, chemical and biological weapons, related materials, and delivery systems The Nunn Lugar program was claimed a success. Since its implementation significant reductions in missile reduction and security stockpiles and materials have occurred.⁷ Additionally, the Ukraine, Belarus, and Kazakhstan are all weapons free. Although work within the Soviet Union continues to be needed, and the problem now extends to other countries. According to the author of a joint U.S./Russia assessment of nuclear threats said, “If you look at the U.S. and Russia together, we own about 90% of the problem—more of the weapons, less of the nuclear materials. So it’s only right that these two countries share their expertise and look hard at ways to work together to lower the risks.”⁸

The world changed once again after the 9/11 attacks in that the United States had enemies not part of a nation-state but willing to use means to inflict catastrophic damage on a grand scale. At this stage, the potential for the integration of terrorism and proliferation was fully realized. Osama bin Laden has called the acquisition of nuclear weapons or other WMD a “religious obligation.”⁹ In addition, evidence shows instances of Al Qaeda attempting to develop nuclear capability.¹⁰ Al Qaeda continues to “pursue its strategic goal of obtaining a nuclear capability.”¹¹ Information seized in Afghanistan in 2002 revealed details regarding Al Qaeda’s efforts to acquire WMD. The captured documents reinforce assessments that al Qaeda is “highly determined” to obtain nuclear weapons and other WMD.¹²

⁷ The Nunn_Lugar scorecard can be accessed at <http://www.dtra.mil/Missions/NunnLugar/scorecards.aspx>

⁸ Comments by Rolf Mowatt-Larssen, *First Joint U.S.-Russia Assessment of Nuclear Terror Threat, Study Warns of Multiple Dangers, Calls for Urgent Action*, Press Release, Belfer Center for Science and International Affairs, Harvard Kennedy School, June 6, 2011.

⁹ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*.

¹⁰ See Rolf Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, Belfer Center for Science and International Affairs, Harvard Kennedy School, January 2010.

¹¹ *9/11 Commission Report*, 380.

¹² David Albright, “Al-Qaeda’s Nuclear Program: Through the Window of Seized Documents,” *Nautilus Institute Special Forum* 47, November 6, 2002.

Shortly thereafter, fears about Al-Qaeda's desire to obtain WMD was compounded by the detection of the A.Q. Khan network, which had been able to create a transnational criminal network dedicated to funneling nuclear components and expertise to several non-nuclear weapons states. Several reports indicated he may also be cooperating with terrorist groups including Al Qaeda,¹³ although that report has not been confirmed in open source documents. The Khan network caused enormous damage to efforts aimed at stopping the spread of nuclear weapons. Not everything is known about Khan's full client list. He visited 18 countries between 1997 and 2003,¹⁴ as well as Afghanistan, which was the base for several terrorist organizations at the time including al Qaeda.

Now, this country is in the midst of the next wave framed by the reality of states like Iran, North Korea, and Syria—nation-states operating outside the non-proliferation regime to WMD programs. The rogue states are pursuing programs operating against international norms and despite international pressure. This situation increasingly creates potential opportunities for terrorists who may be seeking WMDs. These challenges are all framed by the impact of globalization, information exchange, and technology making infraction exponentially, harder to detect—and to stop.

While no doubt exists that this nation now sees terrorism through new eyes and has a new understanding of the extent to which this country's enemies will go, what remains is the question of how to leverage U.S. systems to prevent that from happening. It is crucial to ascertain how it is possible to leverage what are traditional diplomacy tools to be an effective counterterrorism strategy.

¹³ See for example Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 17–18; The Indian Express, "Al-Qaeda Sought Assistance from A Q Khan: U.S. Reports," September 3, 2009, <http://www.indianexpress.com/news/alqaeda-sought-assistance-from-a-q-khan-us-report/511914>.

¹⁴ Albright and Hinderstein, "Unraveling the A.Q. Khan Network and Future Proliferation Networks," 113.

B. THESIS OVERVIEW

1. Problem Statement

Until now, the main goal of U.S. non-proliferation policies has been to prevent the emergence of new nuclear nations; however, an emerging issue may go beyond the possibility of nuclear confrontation between nation-states and must now include a discussion of how to prevent terrorists and non-state actors from acquiring WMD to be used in asymmetrical warfare tactics. The multilateral treaty regimes that the international community has utilized for over almost a century to curb the proliferation of WMDs may not be enough to combat increased global threats. A major weakness of existing multilateral regimes that the next generation of nonproliferation instruments is attempting to address is trading, smuggling, and trafficking of WMD related materials.

It appears as if a considerable gap exists between the theoretical aspects of the non-proliferation regime and its application for the express purpose of preventing WMD terrorism, both domestic and abroad. From a policy perspective, issues of WMD terrorism and non-proliferation are stovepiped and are dealt with as cause and effect, rather than different sides of the same coin. Related, non-proliferation scholars and WMD terrorist experts approach this issue very differently—from a nation-state paradigm based in theory and international norms vs. counterterrorism experts based in criminality and domestic security efforts.

In a struggle to limit the spread of WMD, every available tool in the U.S. security arsenal must be used and linked to a comprehensive strategy that will help prevent non-nation-states from developing or using WMD capabilities. Bridging the gap between diplomatic protocols and law enforcement efforts will lead to a systematic approach in counterterrorism, and thereby, close critical gaps.

2. Argument/Hypothesis

The current non-proliferation regime fails to address efforts needed to combat WMD terrorism adequately. Without connecting these two separate camps, gaps are created that may inadvertently create more opportunities for terrorists to exploit.

The current landscape of transnational terrorism requires a major shift in U.S. non-proliferation policies if it is to address the threat of WMD terrorism and the proliferation of weapons and materials adequately by non-state actors. Non-proliferation measures, cooperative threat reduction, and other arms control initiatives can help limit the opportunities for terrorists to acquire or develop WMD if written consciously to acknowledge and account for the risks of nuclear terrorism. Coupling international protocols with domestic security initiatives may provide a greater defense than either protocols or detection programs alone.

Over the last several decades, the United States has made great strides in tackling conventional terrorism but not necessarily WMD terrorism, specifically. Strategies for preventive detection have been built on the domestic side, and non-proliferation efforts have continued to focus on the international policy level. The weaknesses of these treaties, including the lack of universality, verification and enforcement, and compliance are gaps easily exploited by terrorists. New layered approaches are needed to prevent evolving WMD threats.

Even though the mention of terrorists potentially acquiring WMD due to proliferation issues by nations, the discussion is anecdotal at best. Measures to stop these threats have not manifested and been codified through negotiations and documents and international enforcement non-proliferation efforts.

The central argument of this paper is that effective strategies on the state level are the requirement for meeting threats from non-state actors. Non-proliferation regime must be tied into domestic law enforcement and intelligence, and interdiction efforts. Solutions to this new WMD threat may look unconventional to the non-proliferation regime but these additions will make all aspects more secure.

3. Research Questions

a. Primary Research Question

How can the traditional non-proliferation policy regime be connected to domestic homeland security efforts as an effective counterterrorism strategy?

b. Secondary Questions

How can international/domestic protocols be revised to include the role of non-state actors?

Can traditional diplomacy tools be leveraged to be an effective counterterrorism strategy? How can the United States make linkages with international diplomatic (strategic) policy and domestic prevention (operational) efforts?

How to best maximize investments in counterproliferation programs to enhance protection of the homeland?

4. Methodology

It may be useful to establish a framework for how to better integrate international and diplomatic efforts that might lead to greater security. For purposes of this thesis, policy analysis will be conducted to identify policy options and alternatives. Academic research in the fields of history, security policy, political science, and military science, numerous studies by nongovernment agencies and think tanks, and public statements by government officials and official testimony, provide a plethora of data for this analysis.

A qualitative (rather than quantitative) analysis was used to the study this issue of WMD terrorism in part because few data sets are available for analysis. Qualitative analysis focuses on identifying patterns and synergies in which the combined effect of several elements of the system is greater than the sum of the individual effects of each alone.¹⁵ Moreover, it is more appropriate in the case of WMD terrorism with a limited number of incidents, and therefore, small data set.

Much of the debate of what is known or not known about WMD, especially radiological/nuclear, has also been hampered by the difficulty of trying to acquire evidence about such a sensitive subject, which has caused doubts about the adequacy of this nation's knowledge and raised questions about whether nuclear proliferation can be

¹⁵ Michael Levi, *On Nuclear Terrorism* (Cambridge, MA: Cambridge University Press, 2009), 9.

separated from other processes and phenomena.¹⁶ This body of work focuses on open source data and does not include a review of classified documents. Policy documents regarding international protocols, diplomatic agreements, and policy are readily available. Information on enforcement, breaches of security, vulnerabilities, and intelligence used for criminal investigations are not.

5. Review of the Literature

This literature review provides a reference base from which to understand both the non-proliferation policy regime and counter-proliferation policy as it relates to WMD terrorism. What can be derived from the literature is the following. First is the possibility of non-nation-state actors developing WMD capabilities, the second is the disconnect between the issues of nonproliferation and terrorism. The literature review also presents a current knowledge on the factors impacting a group's inclination toward attacks using non-conventional weapons or WMD, and reviews the literature regarding the threat.

An additional non-related trend appears in what is not written; that the majority of the literature regarding WMD terrorism predominately relates to nuclear terrorism rather biological and or chemical terrorism. As a general rule, the sources consulted for the literature review addressed WMD collectively, although a much greater emphasis is placed upon nuclear proliferation rather than chemical or biological weapons. This literature review addresses attacks utilizing biological and chemical agents, as well as nuclear materials. This literature review does not address the effectiveness of proliferation issues between nuclear weapons states.

Biological and chemical terrorism appears to be a secondary concern within the literature reviewed. In addition, it does make it difficult to apply the term "WMD" term consistently across the entire spectrum of the CBRNE threat.

¹⁶ Tanya Ogilvie-White, "Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate," *The Nonproliferation Review*, Fall 1996, 43.

C. ANALYSIS

Confusion often occurs due to the multi-faceted and complex nature of proliferation dynamics. Those involved in the debate have focused on trying to find solutions to what has been called the “proliferation puzzle. However, exactly what is meant by this term is not always made clear, and this lack of academic rigor has led to the misinterpretation of key contributions, and, ultimately, to theoretical confusion.¹⁷ When the complexities of this process are considered, it is not surprising to discover that none of the existing theories of nuclear proliferation provides a satisfactory explanation of proliferation dynamics, although many provide important pieces of the puzzle.¹⁸

The central limitation of using the current arms control regime to prevent terrorists from acquiring WMD is that treaties proscribe and prohibit the activities of states, not sub-national groups. They focus on thwarting proliferation between states and provide only limited value for preventing the proliferation of weapons and weapons materials to terrorists and other sub-state entities. Treaties that require signatories to adopt national implementing legislation may be the most effective but even those arrangements “are hampered by the variances across countries in such legislation and states’ failures to provide the financial and political support to law enforcement authorities critical for effective implementation.”¹⁹

At the most basic level, the non-proliferation treaties provide valuable normative prohibitions. Fundamentally, the Biological Weapons Convention (BWC) and the Chemical Weapons Convention constitute declarations that the international community bans germ and chemical weapons as taboo instruments of war. The norm against nuclear weapons contained in the Nuclear Non-Proliferation Treaty (NPT) is more ambiguous because it allows some states to retain nuclear weapons while prohibiting others from acquiring them.²⁰ Nevertheless, its prohibitions, combined with the strictures of the

¹⁷ Ogilvie-White, “Is There a Theory of Nuclear Proliferation?”, 4.

¹⁸ Ibid., 43–45.

¹⁹ John Parachini, “Non-Proliferation Policy and the War on Terrorism,” *Arms Control Today*, October 2001, <http://www.armscontrol.org>.

²⁰ Treaty on the Non-Proliferation of Nuclear Weapons, 1968 Treaty on the Non-proliferation of Nuclear Weapons, 1 July 1968, 729 U.N.T.S. 161, 21 U.S.T. 483 [Non- Proliferation Treaty].

International Atomic Energy Agency, nuclear-weapon-free-zones, and other agreements, have contributed to a worldwide belief that nuclear weapons are not acceptable tools of war.²¹

The non-proliferation regimes lack sufficiently strong norms against WMD when used outside of the nation-state construct. This normative deficit is manifested in both a lack of codification and legal measures to stop terrorist use and to a lesser degree to the international double standard on beliefs regarding the possession of WMD. International norms against the *use* of nuclear, chemical, and biological weapons are certainly stronger, although of unclear potency in curbing their *acquisition*.

All these norms have, of course, been violated at times by certain states that had pledged to uphold them. Norms do not shape the behavior of all states or individuals, but they shape that of some. They also provide a basis for which to disallow persons or groups not of a nation-state from ever legally pursuing the development for capabilities. Preventing acquisition, production, stockpiling, or use of chemical and biological weapons helps stigmatize them for states, as well as individuals and rogue groups.

The most pressing case currently to be looked at for lessons are the circumstances surrounding Iran and North Korea—two nations taking bold steps to build nuclear programs outside of the non-proliferation regime and against the United Nations, IAEA. Iran’s nuclear program is one of the most polarizing issues in one of the world’s most volatile regions. While American and European officials believe Tehran is planning to build nuclear weapons, Iran’s leadership says that its goal in developing a nuclear program is to “generate electricity without dipping into the oil supply it prefers to sell abroad, and to provide fuel for medical reactors.”²² However, whether the international community agrees that Iran is enriching fuel for peaceful, or non-peaceful purposes, the real problem becomes in how to deal with Iran as a hostile nation operating outside the international proliferation protocols but also how to stop any technology, materials, or expertise from trickling onto the black market into non-state actors hands.

²¹ BBC News, “Iran ‘Resumes’ Nuclear Enrichment,” February 13, 2006, <http://www.news.bbc.co.uk>.

²² *New York Times*, “NY Times Overview Iran’s Nuclear Program,” September 17, 2010, http://topics.nytimes.com/top/news/international/countriesandterritories/iran/nuclear_program/index.html

The interruption of the A.Q. Kahn network statement was a significant breakthrough for international efforts to uncover a secret network involving companies, countries, and specific technologies involved in such sales. The network of sellers, middlemen, and manufacturers is very large. The manner in which proliferators bought and sold equipment, and information is vital to assessing flaws in current non-proliferation efforts in the illegal trading of nuclear technology.

The budget to support counter-proliferation programs between the Department of Energy, Department of Defense and Department of State, the federal implementing agency, is roughly \$1B annually.²³ Domestically, the United States has spent another billion in investing in nuclear detection technology and building nuclear detection programs,²⁴ in addition to creating an agency of Domestic Nuclear Detection Office, under DHS, to administer.²⁵ Nevertheless, this technology is far from perfect and the chances of finding any such dangerous materials are virtually impossible without accurate intelligence information. Unfortunately, technology is not a silver bullet and is only effective if part of a comprehensive strategy to stop would-be terrorists from exploiting the materials to construct nuclear or radiological weaponry. Nor are the goals of this program linked, and nor is the domestic and international mission aligned. It is unclear as to how the U.S. government is prioritizing these efforts as prior to 2008, nuclear detection programs were averaging about half a billion dollars annually. Obama recently reduced that amount to about \$300 million annually.²⁶

Often, U.S. government policy and the recommendations of non-proliferation analysts focus on a narrow set of proliferation causes and non-proliferation options. The policy instruments available for dealing with proliferation need to expand beyond international treaty centered measures and need to work in better harmony with their

²³ Brian Finlay and Elizabeth Turpen, *25 Steps to Prevent Nuclear Terror: A Guide for Policy Makers* (Washington, DC: The Henry Stimpson Center, 2007).

²⁴ Department of Homeland Security, *Budget in Brief FY2007, Budget in Brief 2009, Budget in Brief 2011*.

²⁵ White House, *National Security Presidential Directive 43/Homeland Security Presidential Directive 14, RE: Domestic Nuclear Detection*, April 15, 2005.

²⁶ Ibid.; Finlay and Turpen, *25 Steps to Prevent Nuclear Terror: A Guide for Policy Makers*.

domestic security foundations. The theoretical and policy understandings of proliferation need to become more explicitly practical.

Policy makers and experts have long recognized that the most powerful tools for preventing nuclear terrorism are those that directly deny nuclear materials and weapons to terrorists. Securing these weapons and materials as best as possible in states like Russia and Pakistan, and denying them from rogue states, such as North Korea and Iran, that may either be unwilling or unable to keep them out of the hands of terrorist, is difficult.²⁷ This view is reflected in the literature, and confirmed in a major survey of leading experts on WMD.²⁸ A growing realization of thought is being seen that a much broader defense can contribute to U.S. security. Much like 9/11. Nevertheless, while careful and sophisticated discussions of locking up materials and preventing proliferation are commonplace, the quality of this debate over broader defenses is far poorer. Some exceptions do occur, but mostly much of the attention is still devoted to the security of nuclear weapons and materials. Others have promoted a layered approach to defense against terrorism more generally but without delving into the details of the nuclear threat. This nation still largely lacks an understanding of how effective broader defenses can be against nuclear terrorism, and most importantly, how to go about designing them.²⁹ Challenges exist with international partners but are also stifled by this country's own internal bureaucracy and governmental organization.

D. ASSESSING THE THREAT

The sheer magnitude of the consequence posed by a nuclear weapon in terrorist hands has spurred the intelligence community, military operations, and political leaders to combat a threat once dismissed as all but nonexistent. Are fears of WMD terrorism founded in solid analytical data or are they trumped up creative thinking by analysts bent

²⁷ Levi, *On Nuclear Terrorism*, 5. See also, Richard Falkenwrath et al., *America's Achilles' Heel* (Cambridge, MA: MIT Press 1998); Graham Allison, *Nuclear Terrorism* (New York: Times Books, 2004); Charles Ferguson and William Potter, *The Four Faces of Nuclear Terrorism* (Monterey, CA: Monterey Institute for the International Studies, 2004).

²⁸ Levi, *On Nuclear Terrorism*, 5; referencing Richard G. Lugar, *The Lugar Survey on Proliferation Threats and Responses*, Office of Senator Richard Lugar, Washington, DC, 2005.

²⁹ Levi, *On Nuclear Terrorism*, 5.

on dreaming up a worst-case scenario? The discussion regarding whether or not terrorism poses a viable threat falls into two ends of the spectrum. Proponents argue that the risk from WMD terrorism, especially nuclear is a low-probability, but plausible scenario. In 2008, in one of his first speeches as President, Barack Obama told the American public, “the single most important security threat we face is nuclear weapons falling into the hands of terrorists.”³⁰ When asked, “What keeps you awake at night?” Secretary of Defense Robert Gates, (who served under both the Bush and Obama administrations) answered, “It’s the thought of a terrorist ending up with a weapon of mass destruction, especially nuclear.”³¹

However, opponents argue that a true nuclear threat is technologically infeasible, and would not have the desired effect. Further, they will argue that the history so far shows that terrorists have chosen conventional weaponry (even if deployed in a new way) as the preferred method. One prominent nuclear skeptic asserted that the intent and capability of terrorist groups is “fundamentally exaggerated, the likelihood of such a group to produce a nuclear weapon to be small and that policy maker are guilty of “atomic obsession,” which is counterproductive.³²

A more detailed analysis of the probability of nuclear terrorism follows in subsequent chapters. However, this paper relies on the assumption that WMD, including nuclear terrorism, is a possibility.

This thesis is organized into six main parts.

Chapter 1 lays out the key issues of inquiry and specifies the method for research. This first chapter summarizes some of the key issues that will be analyzed or fully in the rest of this paper. As background, the core documents that are the basis for the non-proliferation regime, as well as key international documents relating to WMD terrorism

³⁰ Brian Montopoli, “New Obama Add Focuses on National Security,” *CBSNews*, July 15, 2008, http://www.cbsnews.com/8301-502163_162-4262407-502163.html.

³¹ Graham Allison, “How to Keep the Bomb From Terrorists,” *Newsweek*, March 14, 2009.

³² John Mueller, “The Atomic Terrorist, Assessing the Likelihood,” Prepared for presentation at the Program on International Security Policy, University of Chicago, January 15, 2008. For more see Brad Roberts, ed., *Hype or Reality? The “New Terrorism” and Mass Casualty Attacks* (Alexandria, VA: Chemical and Biological Arms Control Institute, 2000), 207–224.

and studies that comprehensively reviewed efforts in WMD terrorism are also included. Definitions regarding WMD and the non-proliferation regime are included to provide the reader with a common understanding of the terms used throughout this paper.

Chapter II provides a comprehensive analysis of the literature to provide a base from which to understand both the non-proliferation policy regime and counter-proliferation policy as it relates to WMD terrorism. Additionally, the core documents that serve as the cornerstone of the non-proliferation regime—the Nuclear Nonproliferation Treaty, the Chemical Weapons Convention, and the Biological Weapons Convention—are reviewed through the lens of emerging proliferation and terrorist threats to analyze potential gaps in the core documents. Key United Nations resolutions regarding terrorism and WMD that were passed after the 9/11 attacks are also reviewed, in addition to UN resolutions following 9/11.

Chapter III analyzes the how great the threat of WMD (particularly nuclear) terrorism actually is. This chapter looks at who may be most likely to commit such an act, how they may do it, and whether the terrorist intent (and desire) matches their capability to execute such a plot effectively. The examination looks at the nexus between proliferation and terrorism, not only analyzing which terrorist groups may be most likely the perpetrator, but also by nations of concern, to complete a history of supporting terrorists, known proliferation efforts, or weak governments, to increase the opportunities for terrorists.

Chapter IV establishes WMD terrorism as a growing threat fueled by broader trends of the 21st century, including emerging patterns in extremism and globalization in an increasingly complex environment. The increasing convergence of issues of terrorism, proliferation, and WMD issues highlighted in this chapter are fueling the odds of WMD terrorism occurring and making it increasing difficult to detect the threats. This chapter highlights five issues that must be incorporated into a non-proliferation framework design.

Chapter V assesses current activities, initiatives, and programs aimed at preventing WMD proliferation and terrorism, at the two distinct approaches to

counterproliferation vs. counterterrorism, which often both address WMD issues from differing perspectives. The second half of the chapter examines the history of efforts to combat terrorism and weapons proliferation by reviewing some of the key global treaties, reports, and domestic efforts to evaluate which may be most effective. Both approaches highlight the continuing evolution of these current strategies, as well as expose gaps in the strategies that often grow in stovepipes.

Chapter VI summarizes the research analysis, and indicates that while neither the non-proliferation regime—nor its core agreements—should be abandoned, they do need to be reinvented to reflect changes in the new world following the end of the Cold War and emergence of transnational terrorism. The paper concludes and makes recommendations to move forward in the era of new proliferation challenges and highlights areas of for additional research.

E. DEFINITIONS

- What is a WMD?

Currently, no single, agreed upon definition for “WMD” from official government sources exists. The term “weapons of mass destruction” was originally a Soviet military term euphemistically used to denote nuclear, chemical, and biological weapons. It is now widely used, usually in reference to chemical, biological, or nuclear weapons, despite debate over its appropriateness and accuracy.³³

The U.S. legal code defines “weapon of mass destruction” as “(A) any destructive device as defined in section 921 of this title (i.e., explosive device), (B) any weapon that is designed or intended to cause death or serious bodily injury through the release, dissemination, or impact of toxic or poisonous chemicals, or their precursors, (C) any weapon involving a biological agent, toxin, or vector (as those terms are defined in section 178 of this title), and (D) any weapon that is designed to release radiation or radioactivity at a level dangerous to human life.”³⁴

³³ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, by Steve Bowman, CRS Reports RL31332 (Washington, DC: Office of Congressional Information and Publishing, March 7, 2002).

³⁴ *U.S. Legal Code (18 USC §2332a)*.

The Federal Bureau of Investigation (FBI) further explains this definition by stating, “WMD is often referred to by the collection of modalities that make up the set of weapons: chemical, biological, radiological, nuclear and explosive (CBRNE). These are weapons that have a relatively large-scale impact on people, property and/or infrastructure.”³⁵ However, the Department of Justice (DOJ) states that any amount of CBRN or explosives, no matter how small, constitutes a WMD. Even innate devices or hoaxes can have WMD aspects.³⁶

Recently, the definition is being interpreted as interchangeable with CBRNE. For instance, although the National Strategy for CBRNE Standards does not provide a specific definition of WMD, it links the terms CBRNE and WMD interchangeably in listing recent attacks and is beginning to replace WMD with the more modern term:

Chemical, biological, radiological, nuclear, and explosives (CBRNE) agents remain a grave threat to U.S. citizens. As outlined in the 2010 National Security Strategy, there is no greater danger to the Nation than a terrorist attack with a weapon of mass destruction. The threats are myriad: the 1995 Tokyo subway Sarin attacks, the *Bacillus anthracis* attacks of 2001, multiple ricin toxin mailings, concern about unguarded nuclear and radiological material worldwide, and the attempted New York City Times Square bombing of 2010.³⁷

Recently, the military has also moved away from the traditional battlefield definition of WMD to account for CBRNE whether or not they can be categorized as WMD:

Chemical, biological, radiological, and nuclear consequence management (CBRN CM) can be described as the overarching United States Government (USG) capability and the strategic national direction, to prepare for, respond to, and recover from the effects of a chemical,

³⁵ Federal Bureau of Investigation, “Weapons of Mass Destruction-Frequently Asked Questions,” (n.d.), http://www.fbi.gov/about-us/investigate/terrorism/wmd/wmd_faqs.

³⁶ Albert J. Mauroni, “Homeland Insecurity, Thinking About CBRN Terrorism,” *Calhoun*, September 2010, <http://calhoun.nps.edu/public/handle/10945/24991>.

³⁷ National Science and Technology Council Committee on Homeland and National Security, Subcommittee on Standards, *A National Strategy for CBRNE Standards*, May 2011.

biological, radiological, and nuclear (CBRN) incident at home or abroad, and whether or not it is attributed to an attack using WMD (WMD).³⁸

The United Nations introduced the concept of “weapon of mass destruction” for Conventional Armaments in 1948 to distinguish nuclear weapons from conventional forms. Any weapons should be included that have “characteristics comparable in destructive effects to those of the atomic bomb;” hence, also chemical and biological weapons.³⁹ The term WMD is still used more widely under international conventions and law. The United Nations’ definition, in contrast to the U.S. legal code, underscores the destructiveness inherent in a real WMD when it describes, “atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons.”⁴⁰

The Defense Against Weapons of Mass Destruction Act of 1996, also known as the NLD (Nunn-Lugar-Domenici) Act defines a “weapon of mass destruction” as “any weapon or device that is intended, or has the capability, to cause death or serious bodily injury to a significant number of people through the release, dissemination, or impact of—(A) toxic or poisonous chemicals or their precursors; (B) a disease organism; or (C) radiation or radioactivity.”⁴¹ The Robb-Silberman Commission also chose to apply this same definition in its report regarding Intelligence and Weapons of Mass Destruction.⁴²

³⁸ Joint Chiefs of Staff, *Joint Publication 3–41, Chemical, Biological, Radiological and Nuclear Consequence Management*, June 21, 2012, I–1.

³⁹ *Commission on Conventional Armaments (CCA)*, UN document S/C.3/32/Rev.1, August 1948, as quoted in UN, *Office of Public Information*, *The United Nations and Disarmament, 1945–1965*, UN Publication 67.I.8, 28.

⁴⁰ *Ibid.*, S/C.3/32/Rev. 1.

⁴¹ Congressional Record, *Defense Against Weapons of Mass Destruction Act of 1996*, also known as the Nunn-Lugar-Domenici Amendment (Amendment No. 4349; Senate June 26, 1996; House June 27, 1996).

⁴² Executive Order no. 13328, *Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction*, 555, February 6, 2004.

F. DISCUSSION

Establishing a definition of WMD raises a number of questions: does it depend on the type of weapon used or the results achieved with that weapon? What constitutes “mass destruction” (physical, destruction, casualties, disruption)?⁴³ The U.S. legal code definition focuses on the non-conventional nature of the weapon rather than clearly demarcating how much destruction the weapon should cause before it is considered a WMD.⁴⁴ For others, particularly in the wake of the World Trade Center airliner attacks, the term WMD has come to include any attack means capable of inflicting mass casualties.

It is important to define “WMD” because this label can mask substantial differences between chemical, biological, and nuclear weapons in terms of their lethality and other impacts, in their ease of acquisition and use, and in their potential appeal to individuals with specific motivations.⁴⁵ It also obscures the ways in which the precursor materials to these weapons might be used to affect a population in a way that does not seek to exploit the full lethal potential of actual weapons.⁴⁶ However, the label also reflects the important similarities among these weapons. If developed and employed with a high level of technical skill, they can create effects quite distinct from those associated with more conventional forms of weaponry.

Commonly, the term WMD is reserved for non-conventional weapons. However, WMD may be a misleading terms when linked to terrorist groups since they are far less capable than nation-states to take chemical, biological, radioactive, and nuclear materials to the next level.⁴⁷ In using the term in regards to terrorists or outside of formal nation-state programs, perhaps the term “WMD” seeks to be more aspirational than literal.

⁴³ Gavin Cameron, “WMD Terrorism in the United States: The Threat and Possible Countermeasures,” *The Nonproliferation Review*, Spring 2000, 163.

⁴⁴ Charles D. Ferguson, *WMD Terrorism” Combating Weapons of Mass Destruction: The Future of Non Proliferation Policy*, ed. Nathan Busch and Daniel Joyner (The University of Georgia Press, 2009), 24.

⁴⁵ Brad Roberts, “Deterrence and WMD Terrorism: Calibrating its potential contributions to Risk Reduction,” *Institute for Defense Analysis*, IDA Paper P-4231, June 2007, 4.

⁴⁶ Ibid.

⁴⁷ Ferguson, *WMD Terrorism” Combating Weapons of Mass Destruction: The Future of Non Proliferation Policy*, 25.

Authors and subject matter experts also define WMD in slightly different ways. Many define it strictly in terms of non-conventional, large-scale nuclear, biological, and chemical weaponry. Some include conventional weapons; others do not. In the trend to use CBRNE rather than WMD, other experts avoid the problem by discussing nuclear, biological, and chemical weapons rather than WMD.⁴⁸ Jessica Stern suggests that the term WMD means weapons capable of killing many people at one time.⁴⁹ Hoffman in *Inside Terrorism*, equates WMD with nuclear, chemical, and biological weapons;⁵⁰ although, over time, his writing has evolved to clearly delineate the distinctions between WMD and non-conventional weapons.

Still further, although the “nexus” concept originated in the decade before 9/11, it became a driving force behind U.S. strategy in the aftermath of the 9/11 attacks. Nevertheless, by interlacing the terrorism and proliferation agendas, catastrophic or mass-casualty terrorism has become synonymous with WMD terrorism. Critics claim this diverts attention from potential attacks of equal lethality employing more-readily obtainable conventional means.

However, the term is still relevant because perhaps it is important to use WMD because extremists have embraced the term for their own use. In 2003, a Saudi cleric issued a fatwa regarding the moral case for mass casualty attacks on noncombatants. It has been set out in a fatwa entitled, “A Treatise on the Legal Status of Using Weapons of Mass Destruction on the Infidels.”⁵¹ Indeed, Bin Laden stated in an interview, that “it is the duty of Muslims to possess them [WMD],” and that “the United States knows that with the help of Almighty Allah the Muslims today possess these weapons.”⁵²

⁴⁸ Richard A. Falkenrath, Robert D. Newman, and Bradley Al Thayer, *America's Achilles Heel: Nuclear, Biological and Chemical Terrorism and Covert Attack* (Cambridge, MA: MIT Press, 1998).

⁴⁹ Jessica Stern, *The Ultimate Terrorists* (Cambridge, MA: Harvard University Press, 1999), 4.

⁵⁰ Bruce Hoffman, *Inside Terrorism* (New York: Columbia University Press, 1998), 196.

⁵¹ Robert Wesley, “Al-Qaeda's WMD Strategy After the U.S. Intervention in Afghanistan,” *Terrorism Monitor* (Jamestown Foundation) 3, no. 20 (2005) or find OBL Time Magazine, December 1998.

⁵² Interview rebroadcast on al-Jazeera, September 20, 2001.

For purposes of this thesis, “WMD” is used to describe chemical, nuclear, nuclear, and radiological forms of weapons. The definition was derived by focusing on the means or type of weapon, rather than the outcome (destructiveness).

This author concedes that these weapons may not lead to mass casualties or major destruction but whose use, or even attempted acquisition, will have far-reaching political, psychological, and economic impacts. The term CBRN may be used interchangeable at points in this paper. CBRNE captures the concept of unconventional weapons while stepping away from the hype and hysteria and implied destruction of WMD. Looking at it this way permits a broadening of traditional categorization to include radiological and CBRNE weapons also, which are far more assessable to terrorists than state-level WMD.

- Nonproliferation vs. Counter-proliferation Efforts

States have constructed policies, and political and legal normative frameworks at the national and international levels aimed at regulating the production and stockpiling of WMD sensitive material within states, as well as their spread through the increasingly globalized channels of international trade to other state and non-state actors.⁵³ The non-proliferation regime is broadly constructed as “interlocking networks of bi-lateral and multilateral alliances, security assurances, treaties, agreements, regulations, voluntary controls, and norms that have been constructed over six decades.”⁵⁴

The character and orientation of these non-proliferation policies have changed due to shifting world politics and events. The end of the Cold War and terrorist attacks have forced a restructuring of the nonproliferation policies and laws of many states, as well as the structures of international organizations and treaty regimes. Global treaties and institutions are supported by implementation elements, such as export controls, national

⁵³ Nathan Busch and Daniel Joyner, ed. “Introduction: Nonproliferation at a Crossroads,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy* (Athens, GA: The University of Georgia Press, 2009), 1.

⁵⁴ Mitchell Reiss, “Foreword” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, ed. Nathan Busch and Daniel Joyner (Athens, GA: The University of Georgia Press, 2009), ix.

laws and regulations, economic and security assurances, sanctions, and regional arrangements.⁵⁵

Non-proliferation activities may be broadly described as efforts calculated . . . to slow the proliferation of WMD-related technologies and preferably to effect a reversal of proliferation trends through requiring disarmament of existing material stockpiles.⁵⁶ Counterproliferation is the most recent development in terminology and activity related to combating WMD. Counterproliferation refers to military efforts, enforcement efforts, or similar proactive efforts to combat weapons proliferation by precluding specific actors from obtaining WMD-related materials and technologies, or to degrade and destroy an actor's existing WMD capability.⁵⁷

Nonproliferation most often takes the form of treaty mechanisms, export controls, and inspection regimes. Counterproliferation represents efforts to cut-off WMD materials from being obtained by certain actors or destroying certain actors' WMD capabilities or related materials.⁵⁸

The current administration of the United States has promoted a counterproliferation approach that places a greater emphasis on proactive coalition-based activities, or even unilateral activities as opposed to traditional non-proliferation efforts based on multilateral treaties and diplomacy.

The combating WMD framework is based on a counterproliferation strategy developed in response to the threat of nuclear, biological, and chemical (NBC) weapons to military forces in the 1990s; however, its scope was broadened after 9/11 to address

⁵⁵ Joseph F. Pilat, "Dealing with Proliferation and Terrorism." in *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy*, ed. Nathan E. Busch and Daniel H. Joyner (Athens, GA: University of Georgia Press, 2009), 15.

⁵⁶ Daniel Joyner, *The Proliferation Security Initiative: Nonproliferation, Counterproliferation and International Law*, 30 Yale J. Int'l L. 507 at 520 (2005).

⁵⁷ Roberts, "Deterrence and WMD Terrorism: Calibrating its potential contributions to Risk Reduction."

⁵⁸ For a more in-depth discussion of counter-proliferation methods and definitions see Nobuyasu Abe *Existing and Emerging Legal Approaches to Nuclear Counter Proliferation in the Twenty-First Century*, 39 N.Y.U. J. Int'l L. & Pol. 929 at 929–930 (2007) (discussing three nonproliferation methods, including —multilateral, plurilateral and unilateral.

concerns relating to homeland security.⁵⁹ Counterproliferation consists of weapons or systems that could destroy an adversary's chemical, biological, or nuclear facilities. It comprehensively describes the collective activities conducted by U.S. government agencies to prevent foreign governments and other organizations from obtaining WMD or from acquiring the materials, technology, and knowledge necessary to fabricate a WMD.

- Nonproliferation (and disarmament) and counter-proliferation

Issues of nonproliferation and disarmament are intertwined. Perhaps most closely related and widely discussed are nuclear nonproliferation and nuclear disarmament. Proliferation is the term used to describe the spread of weapons and weapons-related materials, technology, and information. Therefore, nonproliferation attempts to stop that spread.⁶⁰

Confusion often occurs due to the multi-faceted and complex nature of proliferation dynamics. Those involved in the debate have focused on trying to find solutions to what has been called the “proliferation puzzle” but exactly what is meant by this term is not always made clear, and this lack of academic rigor has led to the misinterpretation of key contributions, and, ultimately, to theoretical confusion.⁶¹ When the complexities of this process are considered, it is not surprising to discover that none of the existing theories of nuclear proliferation provides a satisfactory explanation of proliferation dynamics, although many provide important pieces of the puzzle.⁶²

Proliferation unchecked could lead to an increased risk of terrorism—or at least increased risk of non-state actors able to leverage chemical, biological, or nuclear weapons. The shift from nation-states to non-state actors changes the dynamics of

⁵⁹ Albert J. Mauroni, “A Counter WMD Strategy for the Future,” *Parameters* 40, no. 2 (Summer 2010).

⁶⁰ Joyner, *The Proliferation Security Initiative: Nonproliferation, Counterproliferation and International Law* (nonproliferation activities may be broadly described as efforts calculated . . . to slow the proliferation of WMD-related technologies and preferably to effect a reversal of proliferation trends through requiring disarmament of existing material stockpiles).

⁶¹ Ogilvie-White, “Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate,” 43.

⁶² *Ibid.*, 43–45.

nonproliferation. It is this shifting perception of threat that requires attention to link nonproliferation to the broader counterterrorism effort.

G. EARLY COMMISSIONS RELATED TO THE TERRORISM THREAT

Several Commissions both prior, and post 9/11, made detailed recommendations regarding terrorism and the possibility of WMD use in terrorist acts. Of note are the Bremer Commission, the Hart-Rudman Commission, the Gilmore Commission, and the 9/11 Commission. All four of the commission reports discussed made key recommendation regarding anti-terrorism policy, steps to protect against and prepare for terrorist attacks, as well as intelligence and congressional oversight.⁶³

The National Commission on Terrorism (The Bremer Commission) pre-dated the events of 9/11 and was one of the first commissions to review the evolving threat of terrorism. This early commission was created by Congress and led by Ambassador Paul Bremer III. The Bremer Commission Report, released in June 2000, concluded that international terrorism would impose an increasingly dangerous and different threat to the American homeland. The Commission said that today's terrorism seeks to inflict mass casualties, is less dependent on state sponsors, and are forming loose transnational affiliations that make terrorism attacks more difficult to detect and prevent,⁶⁴ and that this new type of terrorism would require significant "enhanced efforts." The report also clearly names state sponsors of terrorism including Iran and Syria. Among the Commission conclusions were that the first priority for the United States is to prevent terrorist attacks and stated that the U.S. intelligence and law enforcement communities must use the full scope of their authority to collect intelligence regarding terrorist plans and methods.⁶⁵ In regards to WMD, the report stated that a "terrorist attack involving a

⁶³ Richard F. Grimmett, *Anti-Terrorism: Key Recommendations of the 9/11 Commission and Recent Major Commissions and Inquiries*, Report for Congress, August 11, 2004.

⁶⁴ *Countering the Changing Threat of International Terrorism, National Committee on Terrorism, (Bremer Commission Report)*, June 7, 2000.

⁶⁵ *Ibid.*

biological agent, deadly chemicals, or nuclear or radiological material, even if it succeeds only partially, could profoundly affect the entire nation. The government must do more to prepare for such an event.”⁶⁶

The U.S. Commission on National Security/21st Century (USCNS/21), also known as the Hart-Rudman Commission, was chartered by Secretary of Defense William Cohen in 1998 to provide a comprehensive review of U.S. national security requirements in the 21st century. USCNS/21 was tasked “to analyze the emerging international security environment; to develop a U.S. national security strategy appropriate to that environment; and to assess the various security institutions for their current relevance to the effective and efficient implementation of that strategy, and to recommend adjustments as necessary.”⁶⁷ Released on January 31, 2001, the Hart-Rudman Commission may have been the most exhaustive and comprehensive review of U.S. national security strategy since the National Security Act of 1947.

Nevertheless, absent a national consciousness of the terrorist threat, both these reports failed to garner national attention or generate a great deal of reform. Although both these reports foreshadow what lies ahead, neither specifically details how to combat this emerging threat.

The Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction, otherwise known as “The Gilmore Commission,” began its work prior to 9/11 but completed its review after the new terrorism threat had been realized in the United States in 2001. The Commission released its first report in December 1999 and concluded in December 2003 with its fifth and final report. The legislation creating the Gilmore Commission directed it to assess federal efforts to enhance domestic preparedness and highlight deficiencies in federal programs for responses to terrorist attacks.⁶⁸ The First Annual Report focused on “assessing the

⁶⁶ *Countering the Changing Threat of International Terrorism, National Committee on Terrorism, (Bremer Commission Report).*

⁶⁷ USCNS/21, *New World Coming: American Security in the 21st Century* (Washington, DC: U.S. Government Printing Office, September 1999).

⁶⁸ *Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction Charter, (Gilmore Commission),* December 15, 1999.

threat” in which it noted that a trend towards increasing lethality in terrorism over the past ten years has occurred and that terrorists may feel less constrained from using WMD in an attempt to cause mass casualties, especially following the precedent setting attack in 1995 by the Aum Shinrikyo.⁶⁹ “For the Gilmore Commission, the Aum Shirikyo attack marked a turning point in the history of terrorism requiring a “reexamination of the motives and means by which terrorists would attempt to accomplish their aims.”⁷⁰

However, over time and with the events of 9/11, the Gilmore Commission focus morphed from strictly addressing WMD attacks and instead focused on high-probability, low consequence attacks. The Gilmore Commission concluded that despite this increase in attention and funding, the nation still lacked a comprehensive national strategy that could guide efforts to design integrated national domestic preparedness plans to combat terrorism.⁷¹ Moreover, that national plans must recognize that state and local authorities usually provide the first response to terrorist events.⁷² Perhaps most significant was the application of the term WMD, which was substituted for chemical, biological, radiological, or nuclear weapons (CBRN).⁷³ For the first time, the term WMD became part of the domestic lexicon with a broad application, and even included novel threats, such as cyber-terrorism.⁷⁴

For instance, Article VI of the NPT dictates that each of the parties to the treaty undertakes the mission to pursue negotiations in good faith on effective measures relating to the cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international

⁶⁹ *Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction: I. Assessing the Threat*, December 15, 1999.

⁷⁰ *Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction Charter, (Gilmore Commission)*, 40–41.

⁷¹ *Ibid.*, 54–55.

⁷² *Ibid.*, 3.

⁷³ *Terrorism, Cyber Terrorism Committee, A View From the Gilmore Commission before the U.S. House of Representatives, Testimony by James S. Gillman*, October 17, 2001.

⁷⁴ The threat assessment conducted by the Gilmore Commission did not offer a formal assessment of the threat posed by cyber terrorism but concluded that the issues of cyber terrorism, while not conventionally included within definitions of weapons of mass destruction, were so interrelated to the forms of terrorist activity they had considered, that they could not be ignored.

control. In most ways, these policies are complementary and not in competition, however; they also remain disconnected and non-dependent and fail to fully leverage opportunities for international cooperation.

A latent link exists between the failure of Article VI of the Non Proliferation Treaty and the growth of nuclear terrorism. The NPT came into force in 1970 with a mission to end proliferation. It is comprised of articles in which each member state is bound to adhere to for the treaty to be successful. In spite of this, Article VI—the good-faith clause—has been manipulated, ignored, or misused. As long as nuclear states party to the treaty fail to abide by Article VI, all the honest measures to discontinue nuclear smuggling to rogue groups will at no time reach its full potential.

Foreseeably, disagreements over how to interpret this article is still debated between nuclear weapon states that believe that mere agreements to lower the quantity of their nuclear stockpiles satisfied Article VI and the ‘beneficiaries’—non nuclear weapon states that believe that these states have not met the requirements of the good-faith article. However, it is not the relevant argument. The argument should include all nations, both NWS and NNWS. If in good-faith, honest steps are taken to rid the world of nuclear weapons, and subsequently, nuclear material (not used for peaceful purposes), proliferation by rogue groups will be much more difficult and the nuclear black market will run itself out of business. Nonproliferation has to begin to mean all WMD. States have to understand their actions may intentionally, or unintentionally, fuel the terrorist. If the non-proliferation and counterterrorism communities begin to understand that their goals are not mutually exclusive, and in fact, are the same. Nevertheless, they also have to understand it is the means to get there in addition to the end goal, which should work along the same track.

1. The 9/11 Commission and WMD

The 9/11 Commission was specific in sounding the alarm regarding the threat of the potential use of WMD by terrorists. “The greatest danger of another catastrophic attack in the United States will materialize if the world’s most dangerous terrorists

acquire the world's most dangerous weapons.”⁷⁵ Therefore, the Commission recommended that the international strategies adopted to combat Islamist terrorism should be combined with parallel efforts effort to prevent and counter the proliferation of WMD.⁷⁶ Specific measures included strengthening counterproliferation efforts to enable the “capture, interdiction and prosecution of such smugglers;” expanding the Proliferation Security Initiative (PSI) by leveraging the intelligence and planning resources of NATO, as well as extending participation to non-NATO countries such as Russia and China; and finally to continue to support, in an expanded capacity, Cooperative Threat Reduction Program.⁷⁷ It also recommended a Commission to more fully investigate WMD proliferation threats in a separate report.

The Commission on the Prevention of Weapons of Mass Destruction, Proliferation and Terrorism—or the Graham/Talent WMD Commission, as it is known—is a legacy of the 9/11 Commission. A bipartisan, independent commission, chaired by two former Senators, was focused on examining efforts on stopping the spread of WMD. The famously issued warning in 2008 stating, “that unless nations acted decisively and urgently, it was more likely than not that a WMD will be used in a terrorist attack somewhere in the world by the end of 2013.”⁷⁸ It also predicted that the terrorists’ weapon of choice would be biological, rather than nuclear.⁷⁹ It called upon the administration to take 13 steps to reduce America’s vulnerability to such an attack.⁸⁰

H. TENTATIVE CONCLUSIONS

President Obama touched on the complex issue that now drives weapons proliferation and their application to terrorism:

⁷⁵ 9/11 Commission Report, 380.

⁷⁶ Ibid.

⁷⁷ Ibid., 380–381.

⁷⁸ Bob Graham, Jim Talent, Graham Allison, Robin Cleveland, Steve Rademaker, Tim Roemer, Wendy Sherman, Terry Sokolki, and Rich Verma, *World at Risk, The Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism (Graham/Talent WMD Commission)* (New York, NY: First Vintage Books, 2008), xv.

⁷⁹ Ibid.

⁸⁰ The Commissions’ assessment of progress, known as the WMD Report Card is more fully analyzed in Chapter V.

We, too, have a choice to make. As the world has become less divided, it has become more interconnected. And we've seen events move faster than our ability to control them—a global economy in crisis, a changing climate, the persistent dangers of old conflicts, new threats and the spread of catastrophic weapons.⁸¹

Nuclear terrorism poses a grave threat to global security, but seeking a single defense strategy falls short. The current non-proliferation regime fails to address efforts needed to combat WMD terrorism adequately. Without connecting these two separate camps, gaps are created that may inadvertently create more opportunities for terrorists to exploit.

What U.S. policymakers need to create an integrated defensive system that takes advantage of the terrorists' weaknesses and disrupts their plots at every stage. It is fallacy to believe that terrorism can be eliminated or that thousands of miles of U.S. borders, not to mention the borders of U.S. allies, can be sealed. Initiatives to secure nuclear weapons and materials are vital, but they will always fall short unless tied to intelligence and international protocols. "Traditional" non-proliferation policy efforts address the issues through international diplomatic means but fails to connect to domestic efforts for security and detection ventures in the United States.

⁸¹ White House, Office of the Press Secretary, "Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic," April 5, 2009, http://www.whitehouse.gov/the_press_office/Remarks-By-President-Barack-Obama-In-Prague-As-Delivered.

II. LITERATURE REVIEW

A. CONTEXTUALIZING THE LITERATURE REVIEW

This literature review provides a reference base from which to understand both the non-proliferation policy regime and counter-proliferation policy as it relates to WMD terrorism. In assessing the literature, two key issues arise to frame the discussion of terrorists' proliferation relative to nonproliferation and the terrorist threat. First is the possibility of non-nation-state actors developing WMD capabilities, and second is the disconnect between the issues of nonproliferation and terrorism.

This literature review also addresses a third sub-topic; that of presenting current knowledge on the factors impacting a group's propensity toward attacks using non-conventional weapons or WMD.

This review does not address the effectiveness of proliferation issues between weapons states but is instead limited to those proliferation issues that impact WMD terrorism.

An additional non-related trend appears in what *isn't* written; that the majority of the literature regarding WMD terrorism predominately relates to nuclear terrorism rather than biological and or chemical terrorism. As a general rule, the sources consulted for the literature review addressed WMD collectively although a much greater emphasis is placed upon nuclear proliferation rather than chemical or biological weapons. Although this literature review examines attacks utilizing biological and chemical agents, as well as nuclear materials, many studies also described WMD as including chemical, biological and nuclear (and on rare occasion also radiological) but more often than not, used a majority of examples regarding nuclear, but no other substances. Biological and chemical terrorism appear to be a secondary concern within the literature reviewed. Moreover, it does make it difficult to apply the term "WMD" consistently across the entire spectrum of the CBRNE Threat.

The remainder of this summary considers these overarching challenges in further detail, as they are manifested across the nuclear, biological, chemical, and nuclear (missile) regimes in relation to the existing literature.

B. CHALLENGES TO THE NON-PROLIFERATION REGIME

The non-proliferation regime is much broader in scope than the NPT and comprises a wide range of legal and political instruments. International treaties generally fall within four categories: (1) those that prevent nuclear explosive testing, (2) those that prohibit the development, manufacturing, deployment, or stationing of nuclear weapons in certain regional zones, (3) export control guidelines, and (4) those that collectively comprise the mechanisms for the global governance of nuclear energy.⁸²

A systematic examination of the diverse challenges to the nuclear, biological, chemical, and missile non-proliferation regimes reveals that although manifested in different ways and degrees of severity, most types of challenges are common to all regimes. None enjoys universal adherence or compliance.⁸³ All are of limited efficacy in meeting their established goals, yet it remains uncertain whether even the complete fulfillment of their objectives would be sufficient to sustain nonproliferation.⁸⁴ Coupled with the new challenges, such as terrorism, the regime has significant gaps including a lack of comprehensive initiatives to grapple with the new security threats in a world without superpowers and post 9/11.

Moreover, security and political imperatives may overshadow the influence of non-proliferation regimes in key regions of the world, while national and international developments have significant negative consequences for the regimes. Linkages between sensitive technologies, non-proliferation regimes, and conflict-ridden regions create vicious cycles in which progress toward one non-proliferation goal may undermine

⁸² Simpson, "The Future of the NPT," in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 46.

⁸³ Michael Barietta, "Cross Cutting Challenges to the Nonproliferation Regimes," CNS Occasional Papers: #3, Non Proliferation Regimes at Risk," *James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies*, (n.d.), <http://cns.miis.edu/opapers/op3/barletta.htm>.

⁸⁴ Ibid.

prospects for success in another. International disagreement regarding tactics, strategies, and goals, may hinder the international cooperation necessary to sustain the regimes and to evolve the regime to be able to deal with new and emerging threats in the WMD world.

C. PERSPECTIVES ON NUCLEAR PROLIFERATION

To understand better the issues of WMD terrorism, it is first necessary to review the existing literature and theory on nuclear proliferation. Since its inception, non-proliferation literature specifically focuses on why states pursue nuclear capabilities and which non-proliferation efforts are best suited to achieve sustainment, maintenance, and/or reversal of these state sponsored programs. The literature on proliferation was not as vast and varied 10–15 years ago and centered almost exclusively on proliferation as an international policy tool. In the most classic sense, the academic literature of proliferation is discussed in terms of preventing states from “going nuclear.” Although few definitive conclusions exist, the studies largely break these reasons into three factors: (1) technological—that is the scientific capability to develop nuclear programs, (2) external determinants that emphasize the willingness rather than the ability, and are heavily influenced by a state’s security concerns, and (3) domestic determinants that include issues, such as democracy, status, and economics that may influence the desire to develop a nuclear program.⁸⁵

The realist approach to WMD proliferation centers on security concerns. A fairly broad consensus stated that nation-states that face a strong security threat will develop nuclear weapons.⁸⁶ Kenneth Waltz argues that fears about nuclear proliferation are exaggerated, “more may be better” since a new nuclear state will wisely use their weapons to deter other states from attacking.⁸⁷ Scott Sagan, the leading proponent of

⁸⁵ Sonali Singh and Christopher R. Way, “The Correlates of Nuclear Proliferation: A Quantitative Test,” *Journal of Conflict Resolution*, 2004, <http://jcr.sagepub.com/cgi/content/abstract/48/6/859>, 862–864.

⁸⁶ *Ibid.*, 862.

⁸⁷ Scott Sagan and Kenneth Waltz, *The Spread of Nuclear Weapons: A Debate* (London: Norton and Co., 1995), 1–45.

organizational theories of international politics, argues, “more will be worse” as new nuclear states will lack the organizational structures to ensure safe and rational control of their weapons.⁸⁸

The concept of deterrence can be defined as the “use of threats by one party to convince another party to refrain from initiating some course of action.”⁸⁹ A threat serves as a deterrent to the extent that it convinces its target not to carry out the intended action because of the costs and losses that target would incur. In international security, deterrence is based in diplomacy and has served as a cornerstone to U.S. nuclear policy through the Cold War. However, with the end of the Cold War and the end of the superpowers paradigm, the theory of nuclear deterrence and proliferation stands in unknown territory. As Waltz articulates, his belief is that:

New nuclear states will be more concerned for their safety and more mindful of the dangers than some of the old ones have been. Until recently, only the great and some of the major powers have had nuclear weapons. While nuclear weapons have spread, conventional weapons have proliferated. Under these circumstances, wars have been fought not at the center but at the periphery of international politics. The likelihood of war decreases as deterrent and defensive capabilities increase. Nuclear weapons make wars hard to start. These statements hold true for small as well as big power. Because they do, the gradual spread of nuclear weapons is more to be welcomed than feared.⁹⁰

The opposing view is that relying on nuclear weapons to deter greater conflict is flawed and bound to fail catastrophically at some time. With his arguments, Sagan tries to counter the “deterrence as security” theory by discussing that the gradual spread of nuclear weapons to additional states might be a good thing as nuclear deterrence is the only way to maintain stability in conflict situations. The risk of deterrence failures is too big, especially in military-run and weak civilian governments.⁹¹

⁸⁸ Sagan and Waltz, *The Spread of Nuclear Weapons*, 48–49.

⁸⁹ K. Huth, “Deterrence and International Conflict: Empirical Findings and Theoretical Debate,” *Annual Review of Political Science* 2, (1999): 24–25.

⁹⁰ Sagan and Waltz, *The Spread of Nuclear Weapons*, 45.

⁹¹ Scott Sagan, “The Perils of Proliferation: Organizational Theory, Deterrence Theory and the Spread of Nuclear Weapons,” *International Security* 18, no. 4 (Spring 1994): 66–107.

Why nation-states may choose to go nuclear, and what it is necessary to do to manage that situation, is relevant to this study only in terms of how that may impact non-state actors to acquire nuclear, chemical, or biological weapons capability. Conspicuously absent in the literature of the foundational debates on proliferation is the role of non-state actors or terrorism.

During the Cold War and in the immediate years following its demise, the discussion regarding nuclear weapons falling into the wrong hands was largely limited to “rogue nations” that would either be willing to gain nuclear capabilities from others or may be willing to give terrorist groups access to weapons or materials. However, these discussions were always framed from a nation-state perspective. Along with increased incidents of global terrorism, in a dynamic and uncertain security environment, emerging nuclear and other WMD threats—both proliferation and terrorism are seen as growing dangers giving rise to increasing global security. However, after the security environment changed in 2001, a growing concern arose regarding how non-state actors fit into this picture of proliferation and whether terrorists would ever try to develop WMD capability.

The fallout from nation-state proliferation in a new security environment heavily focused on terrorism include unsecured nuclear materials as seen in the former Soviet Republics, states with poor control over nuclear stockpiles, states that may be unwilling to keep nukes from terrorists, such as North Korea, unstable nations like Pakistan that make its stockpiles vulnerable, and knowledge transfers, such as was seen in the A.Q. Khan network that originated in Pakistan. Various State Department threat assessments conclude that although terrorist organizations will continue to seek a WMD capability independent of state programs, sophisticated WMD knowledge and resources of a state could enable a terrorist capability.⁹²

Graham Allison highlights the nuclear threats posed both by states and by non-state actors. His focus shifts between blocking terrorist access to fissile material and denying the emergence of new nuclear weapons states. Allison proposes a number of

⁹² See State Department Country Reports on Terrorism for 2007, 2010 and 2011, for example.

varied measures, especially for keeping fissile materials out of the hands of terrorists.⁹³ While more strongly securing materials at their source to deny terrorist (and also rogue state) access to materials is largely recognized as the most powerful tools in preventing WMD terrorism, (especially nuclear terrorism) discussion is lacking on a broader defense strategy. If U.S. policymakers hope to grapple with the full range of nuclear terrorist threats, they will need a more complete discussion of the differences between these dangers, and a prioritized set of recommendations.⁹⁴ Effective policy discussion will require a discussion regarding the differences in terrorist motivations and how these differences may impact effective strategies to stop them.

Former head statesmen including George Schultz, William Perry, Henry Kissinger, and Sam Nunn have lately taken up the cause of nonproliferation and disarmament and cited the danger of nuclear terrorism as a main concern for the need for new security measures.⁹⁵ As stated in the documentary, “The Nuclear Tipping Point, “the accelerating spread of nuclear weapons, nuclear know-how, and nuclear material has brought us to a ‘tipping point.’ We face a very real possibility that the “deadliest weapons ever invented could fall into dangerous hands.”⁹⁶ George Schultz makes it clear that the threats of further nuclear terrorism weighted heavily in his judgment in his writings on nuclear disarmament.⁹⁷

Absent total nuclear disarmaments, recommendations are made for maintaining a safe, secure and reliable nuclear arsenal.

⁹³ Graham Allison, “How to Stop Nuclear Terror,” *Foreign Affairs*, January/February 2004.

⁹⁴ William Potter, Charles D. Ferguson, and Leonard S. Spector, “The Four Faces of Nuclear Terror and the Need for a Prioritized Response,” *Foreign Affairs*, May/June 2004.

⁹⁵ George Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “A World Free of Nuclear Weapons,” *Wall Street Journal*, January 4, 2007, A15; George Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “Toward a Nuclear Free World,” *Wall Street Journal*, January 15, 2008, A13.

⁹⁶ George Shultz, Henry Kissinger, Bill Perry, and Sam Nunn, *Nuclear Tipping Point*, Movie, Produced by Nuclear Security Project.

⁹⁷ See interviews of George Schultz in “Confronting a Nuclear Tipping Point” interviewed by Bernard Gwetzman, Council on Foreign Relations, March 12 2010; Sarah van Gelder, “George Shultz: No Nuclear Weapons,” in *A Just Foreign Policy*, Summer 2008, as quoted in *Yes!*.

But as we work to reduce nuclear weaponry and to realize the vision of a world without nuclear weapons, we recognize the necessity to maintain the safety, security and reliability of our own weapons. They need to be safe so they do not detonate unintentionally; secure so they cannot be used by an unauthorized party; and reliable so they can continue to provide the deterrent we need so long as other countries have these weapons. This is a solemn responsibility, given the extreme consequences of potential failure on any one of these counts.⁹⁸

However, details on how this is accomplished, or what the threat actually is, remains speculative, at best.

D. THE INTERNATIONAL WMD NON-PROLIFERATION REGIME: A REVIEW OF THE CORE DOCUMENTS AND TREATIES

Three multi-lateral treaties form the basis for the WMD non-proliferation regime: The Nuclear Non-Proliferation Treaty, the Biological Weapons Convention, and the Chemical Weapons Convention. However, these treaties do not directly regulate non-state actor behavior and the requirements outlined in the Nuclear Non-Proliferation Treaty (NPT), the Chemical Weapons Convention (CWC), and the Biological and Toxins Weapons Convention (BTWC) leave substantial gaps, especially given the less than universal adherence to these NBC weapons-related treaties.

1. Nuclear Non-Proliferation Treaty

Before discussing the successes and failures of the non-proliferation regime, it is first important to discuss the foundations of this regime, the Nuclear Non-Proliferation Treaty. The NPT serves as the historical cornerstone for the non-proliferation regime.⁹⁹ As ratified in 1970, the NPT is focused on three strategic areas: (1) to prevent the further proliferation of nuclear weapons (state-based approach), (2) disarmament of existing arsenals, and (3) to encourage and coordinate peaceful uses of nuclear technology.¹⁰⁰ Presently, 188 states are parties to the NPT, which has become the most widely

⁹⁸ George Schultz, William J. Perry, Henry Kissinger, and Sam Nunn, “How to Protect or Nuclear Deterrent,” *Wall Street Journal*, January 19, 2010.

⁹⁹ Simpson, “The Future of the NPT,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 46.

¹⁰⁰ *Ibid.*, 49–51.

subscribed to international treaty in history.¹⁰¹ Four countries with nuclear weapons have chosen to remain outside the treaty regime: India, Pakistan, Israel, and North Korea.¹⁰² North Korea is the only state to have withdrawn from the NPT, which it did in 2003.¹⁰³ Given the wide-ranging and multi-faceted nature of the nuclear non-proliferation regime, the relationship to the NPT is both philosophical and practical.¹⁰⁴ The NPT is limited and it does not create any administrative structures or enforcement mechanisms to support it.¹⁰⁵ Its role is to offer an opportunity for states that do not possess nuclear weapons to make legally binding commitment to remain that way. The treaty's mandate is to provide all of the member states with the means to pursue nuclear energy, while prohibiting the production of nuclear arms and eliminating existing arsenals. This treaty is also attributed with setting the global attitude towards nuclear arms, and beginning the series of nuclear disarmament talks between the United States and Soviet Union during the later years of the Cold War.

The IAEA functions in concert with the NPT as an autonomous international organization under United Nations (UN) auspices that was founded in 1957.¹⁰⁶ The IAEA provides the verification mechanisms that monitor the obligations of the non-nuclear weapons states under the NPT. Within the world's nuclear non-proliferation regime, the IAEA's safeguards system functions as "a confidence-building measure, an

¹⁰¹ William Potter and Jean du Preez, "North Korea's Withdrawal from the NPT: A Reality Check," *Center for Nonproliferation Studies, Monterey Institute of International Studies*, April 10, 2003, cns.miiis.edu/stories/030409.htm#fn1.

¹⁰² Amy Sands, "The Non-proliferation regimes at Risk," *CNS Occasional Papers: #3, James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies*, (n.d.), <http://cns.miiis.edu/opapers/op3/sands.htm>.

¹⁰³ Letter, dated January 10, 2003 by the North Korean Ministry of Foreign Affairs to the French Presidency of the United Nations Security Council and the States Parties of the Nuclear Non-Proliferation Treaty.

¹⁰⁴ Simpson, "The Future of the NPT," in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 46.

¹⁰⁵ Ibid.

¹⁰⁶ *Arms Control Today*, "Fact Sheet and Briefs: The 1997 IAEA Additional Protocol at a Glance," October 2010, <http://www.armscontrol.org/factsheets/IAEAProtocol.asp>.

early warning mechanism, and the trigger that sets in motion other responses by the international community if and when the need arises.”¹⁰⁷

Over the past decade, IAEA safeguards have been strengthened in key areas. Measures aim to increase the likelihood of detecting a clandestine nuclear weapons program and to build confidence that states are abiding by their international commitments. In 1997, the IAEA Board of Governors agreed to a program to strengthen and extend the classical safeguards system. The measures boosted the IAEA’s ability to detect undeclared nuclear activities, including those with no connection to the civil fuel cycle.¹⁰⁸ Some could be implemented based on IAEA’s existing legal authority through safeguards agreements and inspections. Others required further legal authority to be conferred through an “Additional Protocol” as it became known.¹⁰⁹

Since China’s entry to the nuclear club, five additional states have successfully developed the bomb (India, Pakistan, Israel, South Africa, North Korea), although one (South Africa) subsequently made the decision to dismantle its nuclear weapons capability. An additional three states (Belarus, Kazakhstan, and Ukraine) chanced into the possession of nuclear weapons after the collapse of the Soviet Union and decided to relinquish them. Many more states have initiated nuclear weapons programs and then reversed their decisions. One state has lost their nuclear program through international intervention and military force (Iraq), and at least one other (Iran), is believed to be trying to develop nuclear weapons,¹¹⁰ as it holds both the capability and intent to develop nuclear weapons. Although its leaders insist at this time that the program is being

¹⁰⁷ International Atomic Energy Agency, “Factsheets and FAQs, IAEA Safeguards Overview: Comprehensive Safeguards Agreements and Additional Protocols,” (n.d.), http://www.iaea.org/Publications/Factsheets/English/sg_overview.html.

¹⁰⁸ International Atomic Energy Agency, *INFCIRC/540/ Model Protocol Additional to the Agreement(s) between States(s) and the International Atomic Energy Agency for the Application of Safeguards*, September 1997.

¹⁰⁹ This must be agreed to by each non-weapons state with IAEA, as a supplement to any existing comprehensive safeguards agreement. Weapons states have agreed to accept the principles of the model additional protocol.

¹¹⁰ Greg Thielmann, “U.S. Intelligence Assessment of Iran’s Nuclear Program: Essentials Remain the Same,” *Arms Control Now*, January 31 2012, <http://armscontrolnow.org/2012/01/31/u-s-intelligence-assessment-of-irans-nuclear-threat-essentials-remain-the-same/>.

developed for peaceful energy purposes only, evidence strongly suggests that Iran possesses both the intent and capability to develop a nuclear weapons.¹¹¹

Currently, three countries, India, Pakistan, and Israel have never signed the treaty.¹¹² Of the countries that have signed the NPT, only North Korea has ever withdrawn from it.¹¹³ This treaty has defined the global attitudes towards nuclear weapons and nuclear energy since its inception, and the international community has often ostracized those countries that have not complied with it. Its influence cannot be understated, but many believe that its future may be in doubt. The treaty was put into effect in 1968, and it was decided that it would be put up for review every 25 years. At the first review conference in 1995, it was decided that the treaty would be extended indefinitely, and that reviews would be held every five years afterward.¹¹⁴ However, while the Treaty deals the acquisition and of Nuclear Weapons States (NWS) and Non Nuclear Weapons States (NNS), it in no way mentions proliferation issues outside of the nation-state framework anywhere in the 11 articles in the Treaty.¹¹⁵

Utilizing multilateral agreements, such as the NPT and various export control instruments, the United States and its allies have sought to dissuade states from initiating nuclear weapons programs in the first place—building norms against nuclear proliferation and making proliferation practically more difficult. In spite of these efforts, however, the intervening four and half decades have seen numerous states pursue nuclear weapons to varying degrees of success.

2. Governance Regimes to Contain Biological and Chemical Weapons

Nuclear weapons are sometimes referred to almost exclusively under the non-proliferation regime. However, chemical and biological weapons are also part of the

¹¹¹ James R. Clapper, Director of National Intelligence, *U.S. Intelligence Community Worldwide Threat Assessment Statement for the Record, Senate Select Committee on Intelligence*, January 31, 2012.

¹¹² *Arms Control Today*, “Nuclear Nonproliferation Treaty (NPT) at a Glance,” August 2012, <http://www.armscontrol.org/factsheets/nptfact>.

¹¹³ *Ibid.*

¹¹⁴ The United Nations, *2005 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons*, May 2005.

¹¹⁵ See text of Nuclear Nonproliferation Treaty.

WMD non-proliferation regime as part of an expansive definition under WMD and CBRNE. CBW are weapons whose intended means for causing harm is either the toxicity of chemicals or the infectivity of disease-causing micro-organisms.¹¹⁶ Legal definitions have evolved over time. The 1947 United Nations definition of WMD embraces only “lethal” chemical and biological weapons,¹¹⁷ whereas the CBW disarmament treaties of 1972 and 1993 do not have a delineation between dealing with “lethal and non-lethal” and all CBW alike.

One author asserts that the term “nonproliferation” is problematic in its application to CBW because in his words, “international law is now either approaching, or depending on one’s point of view, has long since reached the point at which any possession of CBW is illegal.”¹¹⁸ To use the term “nonproliferation” in the context of CBW term is to imply that the regime is failing.¹¹⁹ The alternate argument is that nonproliferation is applicable because threats do exist and CBW weapons are possible. For instance, in the Iran-Iraq War, Iraq decided to use chemical weapons against Iran and Iran decided to deploy chemical weapons in response.¹²⁰ Incidents, such as use in the Iran/Iraq War,¹²¹ Iraq’s use against its Kurdish population,¹²² or Syria’s admitted

¹¹⁶ Julian Perry Robinson, “Chemical and Biological Weapons,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, ed. Nathan Busch and Daniel Joyner (Athens, GA: The University of Georgia Press, 2009), 74–75.

¹¹⁷ General Assembly adopted Resolution 41 on December 14, 1946. Security Council Resolution 18 (1947), S/268/Rev.1/Corr.1, adopted February 13, 1947, established the Commission on Conventional Armaments. See also Seth Carus, *Defining ‘Weapons of Mass Destruction*, Occasional Paper 8, Center for the Study of Weapons of Mass Destruction (National Defense University Press: Washington, DC. January 2012), 9.

¹¹⁸ Robinson, “Chemical and Biological Weapons,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 74.

¹¹⁹ Ibid.

¹²⁰ Javed Ali, “Chemical Weapons in the Iran-Iraq War: A Study in Noncompliance, *The Nonproliferation Review*, Spring 2001, 43–58.

¹²¹ U.N. Security Council Resolution 582, S/RES/582 (1986), February 24, 1986; U.N. Security Council Resolution 598, S/RES/598 (1987), July 20, 1987; U.N. Security Council Resolution 612, S/RES/612 (1988), May 9, 1988.

¹²² Jim Garamone, “Iraq and the Use of Chemical Weapons,” *U.S. Department of Defense*, January 23, 2003, <http://www.defense.gov/News/NewsArticle.aspx?ID=29540>.

stockpile of chemical weapons,¹²³ and alleged biological weapons program,¹²⁴ or any other rogue nation with the intent to develop a program, makes it necessary to keep proliferation efforts current.

The 1925 Geneva Protocol builds on earlier international agreements, and is widely considered to have become customary international law, thereby becoming binding on all states whether they have or have not formally joined the treaty.¹²⁵ The Geneva Protocol is an international treaty whose members have agreed among themselves not to use CBW against one another. However, one key difference between nuclear weapons and chemical and biological weapons is that no state has the authority to legally possess CBW under the 1925 Geneva Protocol and has been upheld under several supplemental United Nations resolutions.¹²⁶

The Cold War escalated WMD as an offensive weapons race between the Soviet Union and the United States. Under the auspices of the Eighteen-Nation Disarmament Conference and its successor entities, diplomats returned to negotiations aimed at banning such weapons. Following the conclusion of the NPT in 1968, the UN disarmament community and the arms control community more broadly turned again to the CBW topic. At that time, a long-standing stalemate was broken with the decision to separate the problems of chemical and biological weapons, in the belief that the biological problem was more susceptible to rapid negotiation.¹²⁷

¹²³ Neil MacFarquhar and Neil Schmitt, "Syria Says Chemical Arms Reserved for Attack From Abroad," *New York Times*, July 23, 2012, http://www.nytimes.com/2012/07/24/world/middleeast/chemical-weapons-wont-be-used-in-rebellion-syria-says.html?_r=1&.

¹²⁴ Jerry Gordon, "Syria's Bio-Warfare Threat: An Interview with Dr. Jill Dekker," *New English Review*, December 2007. Also, see Chapter 3 on Syrian Threat Assessment.

¹²⁵ Robinson, "Chemical and Biological Weapons," in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 78.

¹²⁶ Geneva Protocol and other UN Resolutions (look up UN Office of Disarmament Affairs).

¹²⁷ Robinson, "Chemical and Biological Weapons," in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 74–77.

The two documents were developed in the latter half of the 20th century, the Biological Weapons Convention (BWC) and the Chemical Weapons Convention (CWC). Together, the BWC and CWC form the core of the CBW governance regime.¹²⁸

3. The Biological Weapons Convention

For decades, the effort to combat the problem of biological weapons (BW) has been at the margins of the global nonproliferation and disarmament effort, which reflected a widespread notion that the problem they posed was not particularly severe, as well as confidence that the strategy in place to address the problem was, by and large, effective.

The BWC was ratified in 1975.¹²⁹ Signatories agree to renounce germ weapons to “exclude completely” the possibility of such weapons being used against human beings, animals, or plants. The BWC uses a general purpose criteria and extends to all “microbial or other biological agents or toxins whatever their origin or method of production, of types and quantities that have no justification for prophylactic, protective or other peaceful purposes.”¹³⁰ The BTWC builds on the prohibitions against the use of biological weapons as agreed in The Hague Declaration of 1899,¹³¹ the Treaty of Versailles in 1919,¹³² and the Geneva Protocol, when in 1925,¹³³ negotiators agreed to a ban on the use, but not possession, of chemical and biological weapons. The BWC is a multilateral treaty of indefinite duration open to any country. The BTWC bans the development, production, acquisition, transfer, retention, and stockpiling of biological

¹²⁸ Robinson, “Chemical and Biological Weapons,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 79.

¹²⁹ *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction*, 10 April 1972, 1015 U.N.T.S. 163, 26 U.S.T. 583 [Biological Weapons Convention].

¹³⁰ See Article I *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction*, April 10, 1972, 1015 U.N.T.S. 163, 26 U.S.T. 583 [Biological Weapons Convention].

¹³¹ *The Hague Declaration (IV,2) Concerning Asphyxiating Gases*, The Hague, July 29, 1899.

¹³² Versailles Peace Treaty, 252 Parry 188, 13 A.J.I.L. 151, 385 (1919).

¹³³ *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, Geneva, June 17, 1925.

and toxin weapons, as well as referencing the already existing prohibitions against their use. It was the first multilateral disarmament treaty to ban an entire category of weapons, and 163 states are parties to the convention,¹³⁴ with 13 additional treaty signatories.¹³⁵

State parties to the BWC are obligated not to develop, produce, stockpile, or otherwise acquire or obtain microbial or other biological agents or toxins of types and in quantities that have no justification for prophylactic, protective, or other peaceful purposes.¹³⁶ State parties are also required to “destroy, or to divert to peaceful purposes, all agents, toxins, weapons, equipment, and means of delivery.”¹³⁷ Finally, state parties may not “transfer to any recipient, and not in any way to assist, encourage, or induce to manufacture or otherwise acquire any of the agents, toxins, weapons, equipment, or means of delivery”; and to take necessary measures to prohibit the above within their own territories.¹³⁸ Enforcement mechanisms for the BWC are troubling, as with the IAEA to the NPT, and the OPCW to the CWC, no such organization to the BTWC exists.

Efforts in the mid-1990s were unsuccessful in establishing legally binding protocols. Today no formal verification regime or monitoring body for the BWC exists. Instead, the convention relies on cooperation and confidence building measures among states.¹³⁹ The 2006 Review Conference has made positive progress on efforts towards universalization but progress on the implementation of the BWC has been slower due to the lack of a formal verification mechanism.¹⁴⁰ Also at issue remain verification and compliance issues.

¹³⁴ Of significant note is the absence of Syria as a member signatory that the United States believes is probably developing biological weapons. See: *Arms Control Today*, “The Biological Weapons Convention (BWC) at a Glance,” updated September 2010, <http://www.armscontrol.org/factsheets/bwc>.

¹³⁵ Biological Weapons Convention Signatories and States-Parties, *Arms Control Today*, updated February 2011, <http://armscontrol.org/factsheets/bwcsig>

¹³⁶ *BWTC, Section X Biological Weapons Convention*, Art. I. See also Joyner, *supra* note 3 at 513 (noting that the convention addressed both —vertical (intrastate) and horizontal (interstate) proliferation).

¹³⁷ *Ibid.*, BTWC Articles II–IV.

¹³⁸ *Ibid.*

¹³⁹ Seth Brugger, “BWC Conference Suspended After Controversial End,” *Arms Control Today*, January/February 2002, 34–35.

¹⁴⁰ *Arms Control Today*, “The Biological Weapons Convention (BWC) at a Glance.”

4. The Chemical Weapons Convention

Ratification of the BWC was followed in 1993 by the CWC, which entered into force in 1997.¹⁴¹ Formation of the CWC took many years, which demonstrates the slow motion of large multilateral treaty regimes. Negotiations towards the CWC stretch back to 1980, while the actual treaty was concluded and opened for signature in 1993. As per treaty provisions, the CWC entered into force after being ratified by the 65th state party, thus bringing the treaty into force in 1997.¹⁴²

As the full convention title describes, states parties to the CWC are prohibited from developing, producing, stockpiling, acquiring, transferring, and using chemical weapons directly or indirectly under any circumstances.¹⁴³ It is prohibited to assist, encourage, or induce others to engage in the banned activities as well. Article II of CWC limits the chemicals covered under the treaty to “toxic chemicals and their precursors” and continues to define a toxic chemical as “any chemical which through its chemical action on life processes can cause death, temporary incapacitation, or permanent harm to humans or animals.”¹⁴⁴

The CWC created the Organization for the Prohibition of Chemical Weapons (OPCW) as its monitoring and verification body.¹⁴⁵ The convention requires states parties to implement national legislation of CWC provisions and establish a national authority to oversee the implementation.¹⁴⁶ Issues of noncompliance are dealt with by the OPCW, which may take measures ranging from requesting a state party to redress a particular situation to a referral of the situation to the UN Security Council.¹⁴⁷

¹⁴¹ *Convention on the Prohibition of the Development, Production and Stockpiling and Use of Chemical Weapons and on Their Destruction*, January 13, 1993, 1974 U.N.T.S. 45, 32 I.L.M. 800 [Chemical Weapons Convention].

¹⁴² *Arms Control Today*, “Chemical Weapons Convention (CWC) at a Glance,” Updated September 2013, <http://www.armscontrol.org/factsheets/cwcglance>.

¹⁴³ *Chemical Weapons Convention*, art. I, sections 1(a)–(d).

¹⁴⁴ *Ibid.*, art. II.

¹⁴⁵ *Ibid.*, art. VIII.

¹⁴⁶ *Ibid.*, art. VII.

¹⁴⁷ *Ibid.*, art. XII.

The Persian Gulf War brought matters to a political head when Iraq's unconventional weapons led to a major international effort to strengthen the global treaty regime by expanding the authority of the IAEA, bringing to rapid conclusion negotiation of the CWC, and by strengthening the BWC through the addition of a monitoring protocol. However, while providing extensive declaration, verification, compliance, and enforcement mechanisms to combat the use and proliferation of chemical weapons, the CWC regime is still a work in progress. Challenges for the CWC include the effects and consequences of potential destruction deadline violations, increasing the adoption of domestic legislation by states parties, and dealing with many states' increasing interest in developing and possessing riot control agents.

Of issue to both the BWC and the CWC is the adapting to terrorist threats since the convention has limited applicability to non-state actors. Currently, the impact of technological change on the problem is of increasing concern, as the diffusion of advanced technologies empowers new BW actors, creates new BW possibilities, and undermines the viability of traditional arms control approaches. Indeed, as the Aum Shinrikyo cult in Japan was the first (and only) documented biological and weapons attack by a non state actor. Nevertheless, a host of militia-related activities in the United States has signaled rising terrorist interest in biological weapons. In a recent statement, President Obama cited that the Syrian program has the potential for CBW to fall into the terrorist and militant hands.¹⁴⁸

Despite the reduction of threats as an increasing number of states fulfill their commitments under international conventions, a small number of states still maintain declared and undeclared stockpiles, and even active BW and CW programs. A biotechnology revolution is making biotechnology more readily available and presents a potential future proliferation risk. Dual-use chemical processes also present a series of ongoing challenges. Both present opportunities for not only for nation-states but also for terrorist groups.

¹⁴⁸ The Associated Press, "Obama Warns Syria Against Chemical, Biological Weapon Use: Some Fear Stockpiles Could Fall into Hands of Radical Groups, August 20, 2012.

E. TERRORISM IN THE PROLIFERATION LITERATURE

A review of the core documents and literature reveal that proliferation concerns are built upon a nation-state paradigm. The role of individual (non-governmental actors) were not considered threats for WMD terrorism and instead only referenced threats from nation-states resulting in war.¹⁴⁹ Until very recently, the non-proliferation regime never even considered non-state actors. However, with the advent of 9/11, the international community began to consider how to include elements to combat terrorism in the existing, and evolving norms. No multilateral regime before the PSI and Resolution 1540 directly addressed these crucial avenues by which WMD materials are traded. The matter was largely left to law enforcement and border patrol in individual nation-states.¹⁵⁰

One of the first acknowledgements of terrorism as a security threat was in the 2002 National Strategy to Combat Weapons of Mass Destruction National Security Presidential Directive 17, (NSPD-17), which the president signed in September 2002.¹⁵¹ In it, the strategy stated “WMD (WMD)—nuclear, biological, and chemical,—in the presence of hostile states and terrorists represent one of the greatest security challenges facing the United States.”¹⁵² According to the strategy, the Bush Administration’s approach to dealing with WMD rests upon “three pillars:” counterproliferation, nonproliferation, and WMD consequence management.¹⁵³ In his statements, President Bush said,

We will not permit the world’s most dangerous regimes and terrorists to threaten our Nation and our friends and allies with the world’s most destructive weapons.¹⁵⁴

¹⁴⁹ See as example, The Nonproliferation Treaty.

¹⁵⁰ Scott Shefloe, *The Proliferation Security Initiative and United Nations Security Council Resolution 1540: International Law and the World’s Recent Efforts to Combat the Proliferation of Weapons of Mass Destruction*,” McGill University, Montreal, June 2008, 33.

¹⁵¹ White House, President George W. Bush, NSPD-17/HSPD 4 (unclassified version), *National Strategy to Combat Weapons of Mass Destruction*, December 2002.

¹⁵² White House, President George W. Bush, *The National Security Strategy of the United States of America*, September 17, 2002.

¹⁵³ 2002 National Security Strategy.

¹⁵⁴ Ibid.

F. 2010 NUCLEAR POSTURE REVIEW

Despite the language put forward in the Strategy to Combat WMD by the Bush Administration in September 2002, in the Nuclear Posture Review released just eight months before 9/11, declassified portions contained no mention of “preventing nuclear terrorism.”¹⁵⁵ However, in 2010, the Nuclear Posture Review (NPR) released by the Obama Administration places the prevention of nuclear terrorism and proliferation at the “top of the policy agenda.”¹⁵⁶

In his April 2009 speech in Prague, President Obama highlighted 21st century nuclear dangers, declaring that to overcome these grave and growing threats, the United States will “seek the peace and security of a world without nuclear weapons.”¹⁵⁷ The 2010 Nuclear Posture Review (NPR) outlines the Administration’s approach to promoting the President’s agenda for reducing nuclear dangers and pursuing the goal of a world without nuclear weapons as he outlined in his 2009 speech in Prague. The NPR describes fundamental changes in the international security environment, and focuses on five key objectives of the U.S.’ nuclear weapons policies and posture.

- Preventing nuclear proliferation and nuclear terrorism
- Reducing the role of U.S. nuclear weapons in U.S. national security strategy
- Maintaining strategic deterrence and stability at reduced nuclear force levels
- Strengthening regional deterrence and reassuring U.S. allies and partners
- Sustaining a safe, secure, and effective nuclear arsenal¹⁵⁸

¹⁵⁵ Micah Zenko and Michael Levi, “Three Steps to Reducing Nuclear Terrorism,” *Christian Science Monitor*, January 25, 2010. See also excerpts from the 2002 Nuclear Posture Review are available at <http://www.globalsecurity.org/wmd/library/policy/dod/npr.htm>; J. D. Crouch, Assistant Secretary of Defense for International Security Policy, “Special Briefing on the Nuclear Posture Review, U.S. Department of Defense, January 9, 2002, <http://www.defense.gov/Transcripts/Transcript.aspx?TranscriptID=1108>.

¹⁵⁶ Department of Defense, *2010 Nuclear Posture Review, Forward by Robert Gates, U.S. Defense Secretary*, i.

¹⁵⁷ White House, “Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic.”

¹⁵⁸ Department of Defense, *2010 Nuclear Posture Review*, April 6, 2010, iii–iv.

The NPR reflects the President's national security priorities and the supporting defense strategy objectives identified in the 2010 Quadrennial Defense Review. Most importantly, for the first time, a national strategy clearly recognizes America's nuclear arsenal, and the threat of nuclear terrorism are interconnected issues, and that unless proliferation trends are reversed, the likelihood of terrorists obtaining nuclear weapons increases, which indicates that it may mean that the manner in which the United States handles its nuclear weapons will have to change. As is stated in the 2010 NPR:

As President Obama has made clear, today's most immediate and extreme danger is nuclear terrorism. Al Qaeda and their extremist allies are seeking nuclear weapons. We must assume they would use such weapons if they managed to obtain them. The vulnerability to theft or seizure of vast stocks of such nuclear materials around the world, and the availability of sensitive equipment and technologies in the nuclear black market, create a serious risk that terrorists may acquire what they need to build a nuclear weapon.¹⁵⁹

For the first time, the United States explicitly stated its approach to preventing nuclear proliferation and nuclear terrorism to include three key elements. The first is to “seek to bolster the nuclear non-proliferation regime and its centerpiece, the NPT, by reversing the nuclear ambitions of North Korea and Iran, strengthening International Atomic Energy safeguards and enforcing compliance with them, impeding illicit nuclear trade, and promoting the peaceful uses of nuclear energy without increasing proliferation risks.” The second includes an acceleration of efforts to implement policies to secure all vulnerable nuclear materials worldwide in four years, and finally to strengthen arms control efforts—including the New Strategic Arms Reduction Treaty, ratification of the Comprehensive Nuclear Test Ban Treaty, and negotiation of a verifiable Fissile Material Cutoff Treaty—as a means of “strengthening our ability to mobilize broad international support for the measures needed to reinforce the non-proliferation regime and secure nuclear materials worldwide.”¹⁶⁰

Relative to goals specific to terrorism is the call for enhancing national and international capabilities to disrupt illicit proliferation networks and interdict smuggled

¹⁵⁹ Department of Defense, *2010 Nuclear Posture Review*, iv.

¹⁶⁰ *Ibid.*, vi–vii.

nuclear materials, and continuing to expand U.S. nuclear forensics efforts to improve the ability to identify the source of nuclear material used or intended for use in a terrorist nuclear explosive device. Also of note is the renewed commitment of the United States to hold any state, terrorist group, or other non-state actor fully accountable that supports or enables terrorist efforts to obtain or use weapons of mass destruction, whether by facilitating, financing, or providing expertise or safe haven for such efforts.¹⁶¹

G. UNITED NATIONS RESOLUTIONS

Following the U.S. lead, the international community also reacted with a comprehensive response to transnational terrorism and the WMD terrorism by using the United Nations.

Directly reflecting the concerns that the 9/11 attacks could have been even more devastating if the terrorists would have had access to chemical, biological, or nuclear weapons, the United Nations adopted Resolution A/57/83 in 2002, which was the initial resolution adopted by the international community to reflect the need to measure to prevent terrorists from acquiring such weapons and their means of delivery. The resolution language stated that actions were taken based upon a deep concern for “the growing risk of linkages between terrorism and weapons of mass destruction, and in particular by the fact that terrorists may seek to acquire weapons of mass destruction.”¹⁶²

1. UN Resolutions 1540 and 1977

In 2004, the UN Security Council took its first formal decision on the danger of the proliferation of weapons of mass destruction, particularly to non-state actors. Adoption of United Nations Security Council Resolution 1540 on April 28, 2004 established binding obligations on all states to refrain from providing any form of support to non-state actors seeking WMD, to adopt, and enforce effective laws that prohibit non-state actors from any involvement with the proliferation of WMD, and to take effective measures to prevent WMD proliferation—including security measures, border controls,

¹⁶¹ Department of Defense, *2010 Nuclear Posture Review*, 9–10.

¹⁶² United Nations Security Council, “UN Security Council Resolution 1540 S/RES/1540 (2004),” (n.d.), www.un.org/Docs/sc/unsc_resolutions04.html.

and law enforcement efforts to prevent illicit trafficking in WMD, their means of delivery, and related materials.¹⁶³ Subsequently, the General Assembly adopted the International Convention for the Suppression of Acts of Nuclear Terrorism, which was opened for signature in September 2005.¹⁶⁴

Resolution 1540 represented the first time WMD proliferation was declared to be a threat to international peace and security and that non-state actors were specifically considered a non-proliferation threat under United Nations protocols. The resolution, adopted under Chapter VII of the UN Charter, is legally binding on all UN member states. In view of its universal reach and mandatory character, Resolution 1540 exceeds previous generic nonproliferation arrangements, which only apply to participating nation-states, and in most cases, rely on nonbinding guidelines.¹⁶⁵

“By virtue of its universal scope and mandatory nature, Resolution 1540 marks a clear departure from previous nonproliferation arrangements and adds a novel layer to the non-proliferation regime.”¹⁶⁶ This resolution is exceptional in that every UN member state is compelled to criminalize the proliferation of WMD (to non-state actors in its national legislation, and to establish effective domestic controls to prevent such proliferation. “‘Gravely concerned’ by the threat of illicit trafficking in nuclear, chemical, or biological weapons and their means of delivery, and related materials.”¹⁶⁷

Resolution 1540 requires all states to implement measures aimed at preventing non-state actors from acquiring WMD, related materials, and their means of delivery.

¹⁶³ United Nations Security Council, “UN Security Council Resolution 1540 S/RES/1540 (2004).”

¹⁶⁴ United Nations, *Convention for the Suppression of Acts of Nuclear Terrorism*, September 2005.

¹⁶⁵ Monika Heupel, “Implementing UN Security Council Resolution 1540: A Division of Labor Strategy,” *Carnegie Endowment for International Peace Press* 87, June 2007, 2.

¹⁶⁶ *Ibid.*, 4.

¹⁶⁷ S/RES/1540 (2004).

... all States shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery, including by establishing appropriate controls over related materials.¹⁶⁸

In addition, acknowledging that Al Qaeda and other terrorist groups have openly announced aspirations to acquire WMD capabilities, the resolution determines that:

..... all States, in accordance with their national procedures, shall adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical, or biological weapons and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them.¹⁶⁹

Chapter VII of the UNSCR 1540, if fully implemented, is intended to help ensure that no state or non-state actor is a source or beneficiary of WMD proliferation. UNSCR 1540 also calls on states to cooperate in preventing the illicit trafficking of NBC weapons and related materials, and provide assistance to other states that lack the capacity to implement the resolution.¹⁷⁰ All states have three primary obligations under UNSCR 1540: (1) to prohibit support to non-state actors seeking such items, (2) to adopt and enforce effective laws prohibiting the proliferation of such items to non-state actors, and (3) to prohibit assisting or financing such proliferation. Resolution 1540 recognizes “the need to enhance coordination of efforts on national, sub-regional, regional and international levels in order to strengthen a global response to this... threat to international security.”

Most notably, Resolution 1540 obligates states to adopt *domestic* control measures to enact controls that include: (a) measures to account for and secure such items, (b) effective physical protection measures, (c) effective border controls and law enforcement efforts, and (d) effective national export and trans-shipment controls over

¹⁶⁸ S/RES/1540 (2004), art. 3.

¹⁶⁹ Ibid., art. 4.

¹⁷⁰ While it is widely discussed that this resolution is intended to impact Weapons of Mass Destruction (WMD) that term is not used in the resolution and is referred to as “Nuclear/Chemical/Biological (NBC).”

such items.¹⁷¹ The resolution further calls upon states to promote dialogue and cooperation on nonproliferation,¹⁷² and to take cooperative action to prevent illegal trafficking.¹⁷³

In April 2011, the Security Council extended the mandate of UNSCR 1540 for 10 years.¹⁷⁴ The passage 1997 of UN Resolution strengthens the implementation for Resolution 1540 by extending for 10 years the mandate of a key international committee that has been helping countries build capacity to combat WMD. The vote signaled the United Nations Security Council's commitment to the long-term goal of ensuring member states take all necessary action to prevent the spread of WMD and upholds the three primary obligations under the resolution: (1) prohibiting support to non-state actors seeking WMD, (2) adopting and enforcing effective laws prohibiting the spread of WMD to non-state actors, and (3) enforcing effective measures to control WMD.¹⁷⁵

2. United Nations Security Council Resolution 1887

The Security Council took a third and noteworthy action on September 24, 2009 when it adopted unanimously UN Security Council Resolution 1887. UNSCR 1887 reaffirms that the proliferation of WMD and their means of delivery are threats to international peace and security and shows agreement on a broad range of actions to address nuclear proliferation, disarmament, and the threat of nuclear terrorism.¹⁷⁶

The Council reaffirmed, in particular, its strong support for the Treaty on the Non-Proliferation of Nuclear Weapons, calling on states that were not yet signatories to accede to it.¹⁷⁷ It also called on state parties to comply fully with their obligations and to

¹⁷¹ S/RES/1540 (2004), paragraphs 2 and 3.

¹⁷² Ibid., paragraph 9.

¹⁷³ Ibid., paragraph 10.

¹⁷⁴ *UN Security Council Resolution 1977, S/RES/1977 (2011)*, April 20, 2011.

¹⁷⁵ Ibid., U. S. Department of State, UN Security Council Resolution 1977, "Fact Sheet," Bureau of International Security and Nonproliferation, November 9, 2011, <http://www.state.gov/t/isn/rls/fs/161355.htm>.

¹⁷⁶ *S/RES/1887 (2009), Maintenance of International Peace and Security: Nuclear Non-Proliferation and Nuclear Disarmament*.

¹⁷⁷ Ibid.

set realistic goals to strengthen, at the 2010 Review Conference, all three of the Treaty's pillars—disarmament of countries currently possessing nuclear weapons, non-proliferation to countries not yet in possession, and the peaceful use of nuclear energy for all.¹⁷⁸

However, although the resolution incorporates language on disarmament measures, critics note that resolution failed to deliver on any substantial framework for progress on achieving President Obama's call for nuclear disarmament as articulated in Prague.¹⁷⁹ Arguing in essence, that the resolution fails to gain new ground and essentially only reaffirms many of disarmament commitments—essentially non-legally binding political statements—by the nuclear weapon states (NWS) during both the 1995 Non-Proliferation Treaty (NPT) Review and Extension Conference and the 2000 NPT Review Conferences.¹⁸⁰

Although 1887 is a reflection of the more “traditional” efforts directed toward nonproliferation, it impacts WMD proliferation by broadly supporting better security for nuclear weapons materials to prevent terrorists from acquiring materials essential to make a bomb by locking down vulnerable nuclear weapons materials,¹⁸¹ minimizing the civil use of highly enriched uranium to the extent feasible, and encouraging the sharing of best practices as a practical way to strengthen nuclear security. The resolution for the first time underscored the Security Council's authority and vital role in addressing the threat to international peace and security posed by the spread of nuclear weapons and underscoring the Council's intent to take action if nuclear weapons or related material are provided to terrorists.

¹⁷⁸ The White House, Office of the Press Secretary, *Fact Sheet on the United Nations Council Summit on Nuclear Nonproliferation and Nuclear Disarmament, UNSC Resolution 1887*, September 24, 2009.

¹⁷⁹ Kaegan McGrath and Vasileios Savvidis, “UNSC Resolution 1887: Packaging Nonproliferation and Disarmament at the United Nations,” *NTI Global Security Newswire*, February 1, 2009, <http://www.nti.org/analysis/articles/unsc-resolution-1887>.

¹⁸⁰ Lawrence Scheinman, “Disarmament: Have the Five Nuclear Powers Done Enough?” *Arms Control Today*, January/February 2005, www.armscontrol.org; Sharon Squassoni, “Grading Progress on 13 Steps Toward Disarmament,” *Policy Outlook, Carnegie Endowment for International Peace*, May 2009, www.carnegieendowment.org.

¹⁸¹ It was President Obama who outlined this goal as a objective in his Prague speech in 2009, and reiterated it in the 2010 Department of Defense Nuclear Posture Review.

H. TRENDS IDENTIFIED IN LITERATURE REGARDING WMD ATTACK

While this section examines some of the basic literature on trends and thoughts from prominent scholars on the issues impacting the desire for terrorists to pursue WMD for operational purposes, a more detailed examination of WMD terrorism as a threat is discussed in Chapter III.

Within the last decade, the literature on terrorists' option to potentially acquire chemical, biological, radiological, or nuclear (CBRN) weapons has witnessed a resurgence. Scholarly and practical analyses to the potential of a catastrophic attack using WMD have been driven in part by specific incidents. The 1995 Aum Shinrikyo sarin nerve gas attack on a Tokyo subway,¹⁸² the discovery of the extensive operations of the A.Q. Khan network, early evidence of Al Qaeda's desire to develop WMD programs,¹⁸³ and the May 2003 fatwa issued that justified the use of nuclear weapons against the United States,¹⁸⁴ have all led experts to re-examine earlier conclusion regarding terrorists' use of WMD.

Since 9/11, a gradual shift in thinking among scholars about the terrorist threat has started to appear in the literature. First, that the threat from terrorists acquiring a WMD weapon (or the material to make one) is greater than that of a nation-state strike against the United States. In fact, in December 2001, a National Intelligence Estimate (NIE) warned, "The Intelligence Community judge[s] that U.S. territory is more likely to be attacked with WMD WMD using non-missile means—most likely from terrorists—than by missiles."¹⁸⁵ Secondly, the routine maintenance and deployment of nuclear weapons, as well as an increase in covert weapons programs throughout the world, increases the likelihood of nuclear terrorism.

¹⁸² See Juergensmeyer's "Armageddon in a Tokyo Subway" and Parachini's "The Making of Aum Shinrikyo's Chemical Weapons Program."

¹⁸³ See as an example, Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*.

¹⁸⁴ Nasir Bin Hamd Al-Fahd, "A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels," *Carnegie Endowment*, May 2003, <http://www.carnegieendowment.org/static/npp/fatwa.pdf>.

¹⁸⁵ Zenko and Levi, "Three Steps to Reducing Nuclear Terrorism."

Although attacks with WMD are plausible, the historical record of the use of unconventional weapons is quite limited.¹⁸⁶ The few historical cases of terrorist interest in, and acquisition of, CBRN weapons make for a comparatively small data set from which to formulate general conclusions about the potential for terrorists to use unconventional weapons successfully. As one researcher assesses, “In the absence of hard data, there are few facts and too many assumptions being made about terrorist WMD plans and intentions.”¹⁸⁷

The literature sustains a confluence of trends that could result in an increased risk of an attack involving WMD. Four such broad trends repeated throughout the literature include the following.

- The emergence of a new type of terrorist and a resurgence in religiously-inspired terrorism. *Ad hoc terrorist* groups motivated by religious conviction, jihadists, violent right-wing extremists, and apocalyptic groups all of whom are fueled by extremist religious ideologies that rationalize destruction and vengeance as both a means to an end, as well as tools to achieve a better world.¹⁸⁸
- The dissolution of the Soviet Union, which created a black market in weapons, their materials and components, and technical knowledge.
- Advances in technology and the dissemination of such information reduce the difficulty of conducting a WMD attack. An increasing number of state weapons programs and dual use technologies in across the WMD spectrum have materials more accessible.
- Finally, a related trend is the involvement of organized crime networks in nuclear smuggling and trafficking.¹⁸⁹ Globalization is making it easier for criminal networks to share information and to operate undetected in illegal trade by increasing the capacity of terrorist groups to organize themselves into transnational networks for the purpose of coordinating operations across different continents.

As one expert testified before Congress, certain organized crime groups are said to have already established links with terrorists. If terrorists manage to find a trusted

¹⁸⁶ David Rapoport, “Terrorism and Weapons of the Apocalypse,” *National Security Studies Quarterly*, Summer 1999; also see the work of Bruce Hoffman regarding discussion on Trends on Terrorism.

¹⁸⁷ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 9.

¹⁸⁸ Hoffman, *Inside Terrorism*, 87–88.

¹⁸⁹ John F. Sopko, “The Changing Proliferation Threat,” *Foreign Policy* (Winter 1996/1997): 3–20.

criminal group in possession of, or capable of providing, SNM in a quality and quantity sufficient for the production of a crude nuclear explosive device, or chemical or biological agent, the prospect of a WMD attack could become a reality.¹⁹⁰

The overarching consensus is that *most* terrorist groups will prefer conventional weapons to WMD. Such a WMD attack is generally regarded as a “low-probability-high consequence” scenario but because of the changing nature of modern day terrorism, WMD attacks cannot, nor should not be discounted. A leading expert in terrorism emphasizes that catastrophic consequences of a WMD attack require continue vigilance and analysis. As stated by Bruce Hoffman:

Competing motives, such as those raised by religious terrorism, coupled with potential opportunity, e.g., ease of access to both the information and material required to fabricate and employ CBRN weapons—could portend for a bloodier and more destructive era of terrorism in the future. ... A combination of unforeseen developments and unexpected technological breakthroughs could launch terrorism on a higher trajectory toward greater levels of lethality and destruction, perhaps involving even CBRN weapons.¹⁹¹

However, later writings of Hoffman assess the WMD threat a bit differently and do not necessarily link increasingly violent terrorist attacks with an automatic escalation to the use of CBRN weapons. Despite al-Qaeda’s long interest in acquiring chemical, biological, radiological, and nuclear (CBRN) weapons, on the infrequent occasions that it or affiliated groups have tried to deploy crude versions of these weapons, their efforts have fizzled. In his more recent assessment, Hoffman and his colleague rank mass-casualty attacks involving true WMD as unlikely to happen.¹⁹²

Only one of these trends identified in the literature directly addresses the question of motivation, which as Hoffman has observed, remains elusive in comparison to studies

¹⁹⁰ Glenn E. Schweitzer, “The Nexus of International Organized Crime and Terrorism. The Case of Dirty Bomb, Testimony to the Subcommittee on Prevention of Nuclear and Biological Attacks of the Committee on Homeland Security, U.S. House of Representatives,” September 22, 2005, http://www.nti.org/e_research/source_docs/us/congress/house_representatives/125.pdf.

¹⁹¹ Bruce Hoffman, *Inside Terrorism, Revised and Expanded Edition* (New York: Columbia University Press, 2006), 277.

¹⁹² Peter Bergen and Bruce Hoffman, *Assessing the Terrorist Threat: A Report of the Bipartisan Policy Center’s National Security Preparedness Group* (Washington, DC: Bipartisan Policy Center, 2010).

of requisite technical capabilities and countermeasures.¹⁹³ Richard Falkenwrath suggested that the study of terrorism is useful for a variety of things, such as understanding motivation, but that it could not provide tactical warning, assess threats, or set priorities. These predictions are limiting in their linear rational, “a straight line projection of the future from the past,”¹⁹⁴ and are, therefore, not necessarily part of solid predictive analysis.

One researcher noted that in dealing with this issue, much of the literature has been marred by a tendency to “comfortably reiterate the same threat mantra without examining more closely certain underlying assumptions.”¹⁹⁵ A terrorist groups’ assumed preference for conventional weapons over WMD does not replace the need for on-going sophisticated threat assessment on motivation: (1) Would terrorists want to cause mass casualties, (2) If so, would they choose use nonconventional weapons?, (3) How would using WMD help meet their goals and objectives when used against a particular target?, (4) How does the terrorist group perceive the impact of using WMD? In answering these questions, authors tend to qualify their conclusions against the characteristics of specific groups and targets rather than characterizing terrorists as a single monolithic entity.¹⁹⁶

The divide makes more sense when juxtaposed against “old-style” or “traditional” terrorist groups, such as ETA,¹⁹⁷ the IRA, and the various ‘red’ terrorist cells operating in Western Europe during the Cold War, and emerging “new style” threats, such as al Qaeda and its affiliates, or Aum Shrinryo, and other apocalyptic sects. As Hoffman explains, in the Cold War paradigm, terrorist groups operated under direct control or at

¹⁹³ Bruce Hoffman, *Terrorism and Weapons of Mass Destruction: An Analysis of Trends and Motivations* (Santa Monica, CA: RAND, 1999), 5.

¹⁹⁴ Richard Falkenwrath, “Analytic Models and Policy Prescriptions: Understanding Recent Innovation in U.S. Counter-terrorism,” *Studies in Conflict and Terrorism* 24, no. 3 (May–June 2001): 159–182.

¹⁹⁵ Amy Sands, ‘Deconstructing the Chem-Bio Threat: Testimony for the United States Senate Foreign Relations Committee, 19 March 2002’,” CNS Report, *James Martin Center for Nonproliferation Studies, Monterey Institute of International Studies*, (n.d.), <http://www.cns.mii.edu/pubs/reports/asands.htm>

¹⁹⁶ Karen Walker, *Threat Convergence: New Pathways to Proliferation*, Fund for Peace, September 2007, 2.

¹⁹⁷ Euskadi Ta Askatasuna (or ETA) is categorized as a Basque Separatist Group in Spain.

the behest of a foreign government, or claimed ethnic or nationalist aspirations. Such groups were conservative in their operations, and slow to innovate in their escalation of lethality, targeting choices, or skill in defeating countermeasures to conventional high-explosive attacks.¹⁹⁸ “Traditional” terrorist groups sought to preserve their eligibility for a seat at the post-conflict negotiating table. In short, these groups regarded themselves as fundamentally part of the political process, not separate from it.¹⁹⁹ In marked contrast to the more traditional terrorist groups, who rationalized its use of violence as an instrument for achieving strategic political goals, the violence employed by new terrorist groups is far less discriminating and far more lethal as a consequence. New terrorist groups, particularly religiously motivated ones, may be freer of such constraints and may see WMD terrorism not just as a tool for political change, but a religious duty steeped in moral justification. As Cameron has observed, ideologically motivated groups adopt a polarizing “us” versus “them” worldview, which offers a moral justification for mass-casualty attacks.²⁰⁰

Bruce Hoffman theorizes that the terrorist fundamentally sees himself as an *altruist*. “He believes that he is serving a ‘good’ cause designed to achieve a greater good for a wider constituency—whether real or imagined—which the terrorist and his organization represent.”²⁰¹ While this argument is equally applied in both “traditional” and more “modern” terrorism groups, it sheds new light into the ease of justification of WMD incidents.

In a separate essay, Hoffman argues that the growth of religious-inspired terrorism has already contributed to international terrorism’s increasing lethality and also that many of the constraints (both self-imposed and technical) that previously prevented

¹⁹⁸ Bruce Hoffman, “Terrorism and WMD: Some Preliminary Hypotheses,” *The Nonproliferation Review* (Spring/Summer 1997): 46.

¹⁹⁹ Jonathan Stevenson, ‘Terrorism: New Meets Old’, *Survival*, 43, no. 2 (2001): 153–57.

²⁰⁰ Gavin Cameron, *Nuclear Terrorism: A Threat Assessment for the 21st Century* (New York: Palgrave MacMillan, 1999), 135.

²⁰¹ Hoffman, *Inside Terrorism*, 37.

terrorist use of WMD are eroding as well.²⁰² The combination of new motives, different rationales, and increased opportunities coupled with enhanced terrorist capabilities may lead to a new era of terrorist violence more dangerous and deadly than in the past. As Peter Chalk has observed:

The prevalence of radical religious imperatives [...] has significant implications for the lethality of terrorism. For the religious zealot, there is essentially no reason to show restraint in the perpetration of violence. The main objective is to inflict as much pain and suffering as possible, with the enemy typically denigrated as fundamentally evil and beyond all redemption.²⁰³

While general agreement exists among scholars and experts regarding the trends, researchers are split on their calls for concern. Potter, Levi, Stern, and Falkenwrath all assess the danger of WMD attacks as strong concern and realistic threat.²⁰⁴ In the Belfar Institute's report entitled, "Islam and the Bomb," its leading researcher states, "...al-Qaeda's WMD ambitions are stronger than ever." In addition, "this intent no longer feels theoretical, but operational."²⁰⁵ Richard Falkenrath has argued that scholars focusing on terrorism were skeptical of the WMD threat largely because in his view, they regarded the threat of WMD terrorism as "highly unlikely and distracting"—a judgment they based on observations of the past.

In contrast, traditionalists have a more conservative call for concern. Experts, such as Jenkins, maintain that the WMD threat is greatly exaggerated.²⁰⁶ Cameron echoes this conservative view that the threat to the United States by the use of WMD has been "overstated and misrepresented."²⁰⁷

²⁰² Bruce Hoffman, "Terrorism and WMD: Some Preliminary Hypothesis," *Non Proliferation Review*, 1997.

²⁰³ Peter Chalk, "The Evolving Dynamic of Terrorism in the 1990s," *Australian Journal of International Affairs*, 53, no. 2 (1999): 151–67.

²⁰⁴ See for example, Richard A. Falkenrath, "Confronting Nuclear, Biological and Chemical Terrorism," *Survival* 40, no. 3 (Autumn 1998): 53; Ferguson and Potter, *The Four Faces of Terrorism*; Levi, *On Nuclear Terrorism*; Stern, *The Ultimate Terrorists*.

²⁰⁵ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 4.

²⁰⁶ Brian M. Jenkins, *Will Terrorists Go Nuclear?* (Amherst: New York, Prometheus Books, 2008).

²⁰⁷ Cameron, "WMD Terrorism in the United States: The Threat and Possible Counter Measures," 162–179.

I. CONVENTIONAL WEAPONS VS. WMD WEAPONS

Researchers have generally concluded that terrorists appear more likely to choose to employ conventional weapons over non-conventional weapons and will likely choose to use what they can readily acquire rather than to go through the technically complex process of making weapons from scratch or stealing them from a state's arsenal.²⁰⁸ In describing the potential of terrorist groups to graduate to more sophisticated weapons, and the commitment to acquiring nuclear weapons reflects what a RAND Cooperation study called the "inexorable escalation" of terrorist goals.²⁰⁹

In examining whether or not terrorists may prefer conventional weapons is a critical correlation not a causality. Whereas evidence exists that the lethality of terrorist attacks is increasing (in terms of frequency, number of fatalities and casualties, and the places and victims targeted), the resort to WMD does not necessarily follow. As Jenkins asserts:

There is, however, no inexorable linear progression that takes one easily from the currently identified spectrum of potential subnational nuclear terrorists to actual subnational nuclear terrorists, or from the nuclear incidents that have occurred thus far to nuclear actions of greater consequence.²¹⁰

However, in Cameron's words, groups have not achieved their "killing potential" using conventional weaponry.²¹¹ Graham Allison has prophetically observed "You can't kill four million Americans by flying airplanes into buildings."²¹²

²⁰⁸ John Parachini, "Non-Proliferation Policy and the War on Terrorism," *Arms Control Today*, October 2001, <http://www.armscontrol.org>. See also research by Walker, *Threat Convergence: New Pathways to Proliferation*.

²⁰⁹ Brian Jenkins, *Countering Al Qaeda: An Appreciation of the Situation and Suggestions for Strategy* (Santa Monica, CA: RAND Corporation, 2002).

²¹⁰ Brian Jenkins, *The Potential for Nuclear Terrorism* (Santa Monica, CA: RAND Corporation, May 1977), 4.

²¹¹ Cameron, *Nuclear Terrorism: A Threat Assessment for the 21st Century*, 136.

²¹² Lucy Walker, *Countdown to Zero*. Documentary movie, Directed by Lucy Walker, and produced by Lawrence Bender and Harvard University, 2010.

Most terrorist groups will weigh choices based on rationality and cost-benefit analysis. It must be asked, what can terrorists accomplish with WMD that they may not accomplish through more conventional means?

The use of nonconventional weapons may largely depend upon the desired mission outcome. Palfy's research suggests that if the group's objective is to specifically produce large amounts of casualties, they will prefer employing conventional weapons systems, while others who are more focused on inciting fear, panic, and general disruption—regardless of the amount of resultant casualties—may be more tempted to use unconventional weapons.²¹³

As discussed above, the use of WMD weapons may be fueled by radical religious motivation. In similar research by Mowatt-Larssen, targeted specifically toward militant Islamists, he found that the group will employ a rationalized risk-gain assessment in gauging its level of interest, motivation, and justification. This expert concludes that the “ideology of militant Islamists is extreme, but it is not irrational.” “The motivation to possess and use WMD flows logically from an extreme, but very rational set of concrete goals that are based on a certain interpretation of history and religion.”²¹⁴

However, the use of a CBRNE weapon need not necessarily lead to mass casualties. Such a weapon deliberately limited to a small-scale immediate impact could have a disproportionate long-term consequence, for example, by generating fear and alarm at unprecedented levels.²¹⁵ Cameron agrees, writing that a group seeking widespread coverage absent widespread devastation or casualties might resort to low-level nonconventional weapons.²¹⁶ Nevertheless, a convincing claim downgrading the likelihood of a WMD attack is that previous documented attacks employing biological, chemical, or radiological agents, have not achieved mass destruction. The lack of terrorist

²¹³ Arpad Palfy, “Weapon System Selection and Mass-Casualty Outcomes,” *Terrorism and Political Violence* 15, no. 2 (2003): 82.

²¹⁴ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 17.

²¹⁵ Walker, *Threat Convergence: New Pathways to Proliferation*, 7.

²¹⁶ Cameron, “WMD Terrorism in the United States: The Threat and Possible Countermeasures,” 168.

incidents involving WMD could thus prove prohibitive; however, it can also signal that a successful attack could spawn imitative attacks.

Jenkins also alludes to the prestige factor, that in attaining a nuclear capability, the terrorist group imitates governments whose arsenals place them among the world's major powers, and renders the terrorist group "legitimate" in the eyes of their goal-sharing constituencies. The terrorist group's desire to unleash forces with long-term consequences may make a WMD device more attractive than conventional weapons. In particular, the prestige associated with acquiring a nuclear capability is unmatched by chemical or biological weapons. A nuclear device would set a terrorist organization apart from any other group, would compel governments to take the terrorists seriously, and would represent a "quantum leap" in terrorist attacks.²¹⁷

As previously stated, the literature equivocates over terrorists' resort to WMD. The authors giving higher credence to the threat of a WMD attack acknowledge the difficulties a terrorist group would need to overcome to acquire, weaponize, and successfully conduct an attack resulting in mass casualties. Nor do the authors documenting terrorist groups' preferences for conventional weapons discount entirely the threat of a WMD attack. A conclusion drawn from the literature is the imperative for improved threat assessment. Certainly, the quality of data collected to analyze specific terrorist groups, their ideology and motivations, their targets, their messages, their audiences, and their long-term goals, as well as tactical aims, is critical to an accurate assessment.

J. CONCLUSION

A complex of factors shapes a group's propensity to acquire and use unconventional weapons. Due to a lack of statistical data on WMD incidents, the literature is large on speculation but low on quantitative analysis. However, the qualitative data substantiates the picture of low-probability, high consequence threat for which comprehensive policy measures are required. Yet, despite the policy relevance and

²¹⁷ Cameron, "WMD Terrorism in the United States: The Threat and Possible Countermeasures," 168; Walker, *Threat Convergence: New Pathways to Proliferation*, 7.

the multitude of examples to work from, little work has been done to identify the general conditions and strategies to prevent either nuclear terrorism or proliferation of other WMD, such as chemical and biological. The data also demonstrates a gap between international policy measures and the federal domestic initiatives designed to thwart the same problem.

Although it is important to temper assumptions about the “inevitability” of WMD terrorism, it is equally important not to let the pendulum swing too far in the other direction and to discount it completely. Just as the issue of WMD accessibility for terrorist groups is contested, so too is the question of whether such groups would actually choose to employ WMD in certain circumstances. Skepticism towards the notion that terrorists will seek to use WMD is largely predicated on accepting the assumption that it may be too difficult or complicated a process. A related assumption is that groups will be motivated to increase capabilities and lethality in this linear fashion. A final related assumption is that once terrorists gain access to WMD materials, they will therefore be able to successfully construct and deliver such a weapon to a target.²¹⁸ The literature tends simply to accept a premise either that WMD terrorism is only “a matter of time,” or that it is too difficult to be of real concern. However, this viewpoint is no substitute for detailed and measured threat assessment.

Non-state terrorist groups with nuclear weapons are conceptually outside the bounds of a deterrent strategy and present difficult new security challenges. In looking at the challenges presented by non-state actors in relevance to WMD terrorism, the policies designed to address problems fail in several key areas: (1) the risks of non-state actors’ procurement of nuclear materials, (2) the potential for collaboration between state and non-state actors as an avenue to WMD proliferation, (3) a lack of international policy instruments and enforcement mechanisms to keep pace with the threat, and (4) failure to integrate all aspects of policy making to prevent WMD terrorism.

²¹⁸ Andrew O’Neil. “Terrorist Use of Weapons of Mass Destruction: How Serious is the Threat?,” *Australian Journal of International Affairs* 57, no. 1 (2003): 99.

III. THE THREAT OF WMD TERRORISM—WHO, WHY AND HOW CAPABLE. IS IT REALISTIC TO THINK THAT TERRORISTS WOULD GO NUCLEAR?

A. THE NEXUS BETWEEN PROLIFERATION AND TERRORISM

In this modern nuclear age, “nuclear actors straddle a single spectrum of risks.”—At one end are advanced nuclear arsenals of superpower nations—at the other—terrorist groups constructing a crude nuclear weapons.²¹⁹ In between lie rogue nations cultivating illicit nuclear weapons programs and others who hope to opt in as a nuclear world to develop new energy sources. The complex interactions between states and groups both within and outside of the non-proliferation regime make managing nuclear threats difficult.

The historical record of terrorists WMD capabilities is small and complicated by significant information gaps. The size of the limited dataset and the considerable unknowns about the cases where groups have sought these capabilities make it difficult to assess accurately the nature of the danger and to anticipate new developments in the nature of the threat. However, it is known that terrorist groups have indeed tried to acquire WMD weaponry and that both a “supply” and “demand” side exists to this nuclear black market in addition to the continuing efforts to make stockpiles of both materials and weapons as secure as possible. Understanding how and why—essentially the “nexus” between proliferation and terrorism—are key to better building programs and protocols to lessen the risks.

A terror attack using nuclear weapons could be achieved several ways: the theft of an intact nuclear weapon, stealing fissile material to construct an improvised nuclear device (IND), an attack or sabotage against a nuclear facility, or the release of a “dirty bomb” using radioactive (but not necessarily nuclear) materials.²²⁰ Although WMD

²¹⁹ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 13.

²²⁰ Potter, Ferguson, and Spector, “The Four Faces of Nuclear Terror and the Need for a Prioritized Response.” See also full report by Ferguson and Potter.

terrorism remains rare, the Central Intelligence Agency has reported for the last several years that terrorist interest in WMD is growing, as is the number of potential perpetrators.²²¹

B. NUCLEAR MATERIALS—THE KEY INGREDIENTS

While significant efforts have been made to shore up nuclear supplies and unsecured materials, and the proliferation of nuclear technology have become a significant problem over the last decade. Access to nuclear experts, critical materials, and facilities has become a real possibility for a terrorist group. Worldwide hundreds of locations hold nuclear weapons or weapons grade material²²² (but due to the secrecy of these facilities, the exact number is unknown). One Congressional report on terrorism by the Congressional Research Service warned that terrorists could “obtain HEU from the more than 130 research reactors worldwide that use HEU as fuel.”²²³ As of 2007, an estimated four out of five research reactors used to produce HEU for civilian use lacked adequate security to protect against sophisticated thieves, while only around one-third of HEU-fueled research reactors have had all their HEU monitoring removed.²²⁴ The report noted that the nations of “greatest concern as potential sources of weapons or fissile material” are widely thought to be Russia and Pakistan.²²⁵ Terrorists will obtain plutonium or HEU wherever the combination of their strength and the security system’s weakness makes it easiest to steal.²²⁶

²²¹ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, 112–113.

²²² The Belfar Center for Science and International Affairs, *Nuclear Terrorism Threat Assessment*, April 12, 2010 as cited in Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 16.

²²³ Ibid.; U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*.

²²⁴ Tanya Ogilvie-White, “Facilitating Implementation of Resolution 1540 in South- East Asia and the South Pacific,” in *Implementing Resolution 1540: The Role of Regional Organizations*, ed. Lawrence Scheinman (New York: United Nations Institute for Disarmament Research, 2008).

²²⁵ Dafna Linzer, “Nuclear Capabilities May Elude Terrorists, Experts Say,” *Washington Post*, Wednesday, December 29, 2004, A1.

²²⁶ Matthew Bunn, “Nuclear Terrorism: A Strategy for Prevention,” in *Going Nuclear: Nuclear Proliferation and International Security in the 21st Century*, ed. Michael E. Brown, Owen R. Coté, Jr., Sean M. Lynn-Jones, and Steven E. Miller (Cambridge, MA: MIT Press, 2010).

In 2009, the global stockpile of HEU was about 1,600,000 kg, enough for more than 60,000 nuclear weapons; the global stockpile for (separated) plutonium (Pu) was about 500,000 kg., which is also sufficient for more than 60,000 weapons.²²⁷

So far, the majority of illicit trafficking cases where “plutonium” was offered for sale actually involved sealed radioactive sources, other radioisotopes, or even non-radioactive materials. Only two known cases involved dangerous forms of plutonium. In May 1994, 6.2 grams of plutonium of suspected military origin was found in the garage belonging to a businessman in Tengen, Germany, and in August 1994, 363 grams of mixed plutonium-uranium oxide (MOX) powder were seized from smugglers at the Munich International Airport upon their arrival from Moscow.²²⁸

Recorded thefts of nuclear materials appear in open source literature. The IAEA released data from its Illicit Trafficking Database that confirms 15 cases of nuclear trafficking in 2008 alone.²²⁹ The IAEA has also reported 1,266 incidents of illicit trafficking over the last 12 years. These incidents involved 99 countries and included 18 incidents involving special nuclear highly enriched uranium or plutonium trafficking.²³⁰ However, analyzing HEU and plutonium trafficking is challenging because credible information on key aspects of nuclear trafficking investigations is not always available, and because a concern exists that not all such events have been detected by authorities.²³¹

Despite terrorists’ known interest in acquiring nuclear materials for building a nuclear weapon, so far, however, no open source evidence links terrorist organizations

²²⁷ *Global Fissile Materials Report 2009*, International Panel on Fissile Materials, October 2009, 4.

²²⁸ NTI Global Security Newswire, *Illicit Trafficking in Weapons-Useable Nuclear Material: Still More Questions Than Answers*, December 11, 2011.

²²⁹ Data from the IAEA Database. Also Matthew Bunn, “Securing the Bomb 2010,” reports 18 cases of HEU theft. According to research by Matthew Bunn, over 18 documented cases of highly enriched uranium (HEU) have occurred, which is the essential ingredient needed to construct a nuclear weapon.

²³⁰ Jasbir Rakhra, “Nuclear Terrorism: Overlooked at the NPT, RevCon,” *Eurasia Review*, June 17, 2010.

²³¹ Center for Nonproliferation Studies, NTI Global Security Newswire, “Illicit Trafficking in Weapons-Useable Nuclear Material: Still More Questions Than Answers,” December 11, 2011, <http://www.nti.org/analysis/articles/illicit-trafficking-weapons-useable-nuclear-material-still-more-questions-answers>.

with the known cases of illicit trafficking in HEU or plutonium.²³² However, what known cases of stolen or recovered material do show is that weapons-useable nuclear material, and especially HEU, remains in illicit circulation from thefts that presumably occurred in the 1990s. Therefore, this HEU should be considered potentially available for terrorists, possibly in the quantity sufficient for the production of a crude nuclear explosive device.²³³

The diffusion of scientific and technical information regarding the assembly of nuclear weapons has increased the risk that a terrorist organization in possession of sufficient fissile material could develop its own nuclear weapon. The complete production of a nuclear weapon strongly depends on the terrorist group's access to fissile material and scientific expertise, which may come in the form of black market proliferators, or technical knowledge gathered from nuclear experts involved in a national nuclear program.²³⁴

1. HEU vs. Plutonium—The Preferred Terrorist Ingredient

HEU and plutonium are the two types of special nuclear material (SNM) needed to make nuclear weapons, and are the key ingredients terrorists would need and most likely seek to construct a possible IND.

Uranium mined from the ground must be extensively processed, or enriched before it can be considered weapons-grade material.²³⁵ Plutonium occurs naturally only in trace amounts, and therefore, must be produced in a nuclear reactor.²³⁶ The capability to create either HEU or plutonium capabilities “from scratch” are widely considered beyond the capability of even the most sophisticated terrorist;²³⁷ therefore, the common

²³² Center for Nonproliferation Studies, NTI Global Security Newswire, “Illicit Trafficking in Weapons-Useable Nuclear Material: Still More Questions Than Answers.”

²³³ Ibid.

²³⁴ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, 4.

²³⁵ Levi, *On Nuclear Terrorism*, 15.

²³⁶ Ibid. Also, of note, to use plutonium in nuclear weapons or nuclear fuel, however, it must be separated from the rest of the spent fuel in a reprocessing facility.

²³⁷ Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2005, 119–120.

belief is that terrorists would most likely try to attempt to acquire material from existing stockpiled sources through the diversion, theft or purchase on the black market. HEU exists in much greater quantities, and is used for both weapons and energy programs, which is why it is thought to be the primary desired target for terrorists and explains many of the existing policies intended to secure HEU stockpiles. HEU was termed by one report as the “Holy Grail” of terrorists.²³⁸

The amount of HEU needed to make a nuclear weapon varies with the degree of enrichment and the sophistication of the weapon design. In general, the higher the enrichment level, the less HEU is needed to make a bomb.²³⁹ For a HEU-based nuclear weapon, two basic design options exist, a “gun-type” weapon where two pieces of HEU are brought together quickly and explode, and an “implosion weapon,” where a sphere of HEU is rapidly compressed in a highly symmetrical manner. Gun-type weapons are far simpler in design and could likely be built by some terrorist groups. The second is more difficult technically but requires less HEU.²⁴⁰ Plutonium-based nuclear weapons only work as implosion weapons, with more sophisticated weapons using less plutonium.²⁴¹

Open source estimates vary but “The Global Fissile Missile Report” estimates that only 25kg of HEU or 8kg of HEU are required to create one crude nuclear bomb.²⁴²

²³⁸ The term “Holy Grail” was used to in relation to HEU in Peter Zimmerman and Jeffrey Lewis, “Bomb in the Backyard,” *Foreign Policy*, October 10, 2006.

²³⁹ Technical Note: The amount of HEU or plutonium sufficient for the production of one nuclear explosive device could be different, depending on their nuclear properties. For example, a greater amount of uranium enriched to 80% ²³⁵U would be needed more than uranium enriched to 90% ²³⁵U. IAEA has introduced a term significant quantity (SQ), which is defined as “the approximate amount of nuclear material for which the possibility of manufacturing a nuclear explosive device cannot be excluded.” For plutonium containing less than 80% ²³⁸Pu, it is 8 kg, and for uranium, whose content of ²³⁵U is equal or more than 20%, it is 25 kg (See International Atomic Energy Agency, “IAEA Safeguards Glossary, 2001 Edition, International Nuclear Verification Series No. 3,” 2001, http://www-pub.iaea.org/MTCD/publications/PDF/nvs-3-cd/PDF/NVS3_prn.pdf).

²⁴⁰ Also, proliferation-significant cases are defined as involving kilogram-level quantities of plutonium-239 or HEU with an enrichment level of 80% or more. At least 3 kilograms of plutonium-239 or 25 kilograms of HEU enriched to 80% or more would be required to build a nuclear bomb. In principle, a nuclear bomb could also be built with uranium enriched to less than 80%. The lower the enrichment level, however, the greater the quantity of uranium required. For instance, at 20% enrichment, about 200 kilograms of uranium or more, would be needed to build a bomb. A bomb maker would also need to understand very advanced techniques to be able to use uranium enriched to about 20 percent. Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2005.

²⁴¹ Levi, *On Nuclear Terrorism*, 35–49.

²⁴² “Global Fissile Materials Report 2009,” 127.

Aside from detailing the technical/scientific aspects and hurdles a terrorist has to build a nuclear weapons, these figures are important because they do impact the optimum implementation of preventive/defensive strategies developed to stop such incidents from occurring. It also helps with the intelligence aspect of nuclear terrorism to determine real threats from false ones.

C. CHEMICAL AND BIOLOGICAL THREATS

Chemical and biological warfare programs are much easier to hide and much cheaper to start than nuclear programs.²⁴³ When it comes to the feasibility of using biological or chemical weapons, states (and perhaps terrorists) may be more likely to have the resources, technical capabilities, and organizational capacity to assemble the people, knowledge, material, and equipment to produce such weapons and to be able to deliver them clandestinely to valued targets. The State Department has generally assessed that off acts of terrorism involving chemical agents posed a notable difficulty given the easy access to toxic materials used in industry.

Today's chemical terrorism threat ranges from the potential acquisition and dissemination of chemical warfare agents with military delivery systems to the production and use of toxic industrial chemicals or improvised dissemination systems for chemical agents," the report says. "The growth and sophistication of the worldwide chemical industry, including the development of complex synthetic and dual-use materials, makes the task of preventing and protecting against this threat more difficult."²⁴⁴

Indeed, an attack with a chemical effect is just as likely to involve conventional explosives in unconventional ways against "soft targets" that could have catastrophic chemical or nuclear results, such as conventional attacks against nuclear or chemical facilities in the developing or developed world alike. Nonetheless, "mustering the

²⁴³ Dr. Peter R. Lavoy and Robin Walker, "Over-the-Horizon Threats: WMD Proliferation 2020 Paris, France June 28–29, 2007 Organized by the Center for Contemporary Conflict, U.S. Naval Postgraduate School and the Foundation pour la Recherche Stratégique," *Strategic Insights* VI, no. 5 (August 2007).

²⁴⁴ State Department, 2011 Country Report; *Non-state Actors Pose Growing Proliferation Threat for U.S.*, Global Security Newswire, August 19, 2011.

resources and capabilities to inflict a devastating blow with biological agents has proven to be a formidable task even for states.”²⁴⁵

The report also assessed biological threats, stating,

Developing a mass-casualty bioterrorism capability presents some scientific and operational challenges,” though “motivated scientists with university-level training” could provide the requisite knowledge for such a capability, the report states.²⁴⁶

Specific warning came regarding access to biomaterials and warned that “international laboratories that store and work with dangerous pathogens are often not adequately secured.”²⁴⁷

Chemical and biological proliferation threats did not attain the priority of nuclear proliferation until the late 1980s following the first Gulf War and Iraqi use against Iraqi Kurds and Iran.²⁴⁸ Indeed, the chemical and biological attacks are past events committed by non-state actors. In October 2006/2007, Iraqi insurgents experimented in using chlorine in conjunction with conventional vehicle-borne explosive devices. The attacks resulted in hundreds of injuries and some deaths but were not a viable means of inflicting massive loss of life mostly due to unrefined delivery systems. In the days following September 11, anthrax attacks targeted Congress and the media killing five people and infecting 17 others. According to the FBI, the ensuing investigation became “one of the largest and most complex in the history of law enforcement.”²⁴⁹ The suspect was a scientist who worked in the government’s biodefense lab and was declared the sole culprit of the crime by the FBI. Bioweapons experts who later viewed images of the

²⁴⁵ Testimony of John Parachini, “Combating Terrorism: Assessing the Threat of Biological Terrorism,” Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform U.S. House of Representatives, October 12, 2001, 2–3.

²⁴⁶ State Department, 2011 Country Report.

²⁴⁷ Ibid.

²⁴⁸ Pilat, “Dealing with Proliferation and Terrorism Involving WMD,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 15.

²⁴⁹ Federal Bureau of Investigation, “Anthrax (or Amerithrax) Investigation,” (n.d.), <http://www.fbi.gov/about-us/history/famous-cases/anthrax-amerithrax>; Federal Bureau of Investigation, “Anthrax Investigation: Closing a Chapter,” August 6, 2008, <http://www.fbi.gov/news/stories/2008/august/amerithrax080608a>.

attack anthrax saw no indication of “weaponization.” In addition, subsequent tests by the national laboratories confirmed that the attack powders were not weaponized.²⁵⁰

A relatively new concern is “agroterrorism”—the use of biological agents against agricultural targets. The recent outbreaks of foot-and-mouth and “mad cow” disease in Europe have demonstrated the tremendous economic damage done to agricultural markets even when these epidemics occur naturally. Agroteerrorism also provides the opportunity to inflict significant economic and social disruption, as well as potential human injury (disease and sickness). It is generally agreed that no way exists to guarantee protection against agroterrorist attacks; the targets and opportunities are too many. Consequently, significant attention must be paid to rapid detection and remediation.²⁵¹

Chemical and biological attacks may be easier. Ambassador Ronald Lehman of Lawrence Livermore National Laboratories discussed the phenomenon of latency, and unexercised potential to develop WMD. He noted that gaining nuclear weapons latency was more difficult than achieving chemical weapons latency, which was in turn, more difficult than gaining the latent ability to produce biological weapons.²⁵²

D. WHO WOULD DO IT?

As one researcher summarized, “We are in the paradoxical position of having a clearer understanding of the interior of the atom than we do the interior of the mind of a terrorist.”²⁵³ The lack of quantifiable data in relation to this new breed of terrorism, and WMD use, make it difficult to predict future incidents. However, the very lack of documented cases since 9/11 can lead to an inaccurate assessment that terrorists will not

²⁵⁰ Sandia National Laboratories Makes Key Contributions to Anthrax Investigation, Sandia National Labs Accomplishments, n.d.

²⁵¹ Gavin Cameron, Jason Pate, and Kathleen Vogel, “Planting Fear: How Real is the Threat of Agricultural Terrorism?,” *Bulletin of Atomic Scientists* 57, no. 5 (September/October 2001): 38.

²⁵² James. A. Russell and Christopher Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, Conference Report Prepared by Naval Postgraduate School, Monterey, CA. June 29–July 1, 2005.

²⁵³ Jerrod M. Post, “Prospects for Nuclear Terrorism: Psychological Motivations and Constraints,” in *Preventing nuclear Terrorism: The Report and Papers of the International Task Force on Prevention of Nuclear Terrorism*, ed. Yonah Alexander and Paul A. Leventhal (Lexington, MA: Lexington Books, 1987), 91.

chose to use this tactical option. What has been learned is the extent to which an enemy motivated by political and religious ideologies will go to be heard. What is not known is how to predict accurately who will use such a tactic and what exact circumstances will compel them to take such a risk.

The post-9/11 era and the shadow of terrorism being launched on a massive scale by a terrorist group have transformed the way this nation's adversaries are perceived. No longer are threats to U.S. national security only seen through the lens of nation-state confrontation. According to one researcher:

Some of these entities, with transnational character and motivations that go beyond normal political goals, have shown a willingness to employ any available weapon to cause maximum damage to civilian targets. There is no reason to believe that they would balk at the use of nuclear weapons or biological ones, which have less predictable, less immediate, and less controllable effects.²⁵⁴

Al Qaeda has understandably been the primary focus of this country's attention since 9/11. Under the leadership of Osama bin Laden, Al Qaeda, declared its intention to conduct further mass-casualty attacks on the United States and its allies. Substantial evidence is found in statements by Al Qaeda leadership.²⁵⁵ Evidence of attempting to build capability in developing dirty bombs can be found in the June 2002 arrest of suspected al Qaeda associate Abdullah al Muhajir, also known as Jose Padilla. Padilla was arrested by U.S. authorities for scheming to develop and use a dirty bomb in an American city.²⁵⁶ According to U.S. officials, the plans that Padilla had to launch a nuclear attack were highly inaccurate. However, Padilla did not recognize the inaccuracy of the plans and took them to Al Qaeda leadership telling them of his desire to launch such an attack. In response, Abu Zubaydah apparently cautioned Padilla to "think

²⁵⁴ Harold Brown, "New Nuclear Realities," *The Washington Quarterly*, Winter 2007–08, 13.

²⁵⁵ The U.S. –Russia Joint Threat Assessment on Nuclear Terrorism found that in addition to al Qaeda, terrorists from the North Caucasus region remain committed to conducting catastrophic attacks, have carried out reconnaissance at nuclear weapon storage sites, have plotted to hijack a nuclear submarine with nuclear weapons on board, have planted radiological materials in Moscow, and have repeatedly threatened to attack nuclear power plants. These groups include factions in Chechnya, Dagestan, Ingushetia, and elsewhere.

²⁵⁶ Amanda Ripley, "The Case of the Dirty Bomber," *TIME*, June 16, 2002, <http://www.time.com>.

smaller”—to get some training and attack America with a so-called “dirty bomb,” a conventional explosive packed with radioactive waste that would spew when detonated. This demonstrates a lack of technical expertise, but a strong intent and desire.

Another 9/11-scale operational plot managed by the Al Qaeda core leadership was the development of anthrax for use in a mass casualty attack in the United States, and was being developed parallel to the group’s efforts to achieve the same effect as using a nuclear bomb—perhaps as a back-up if nuclear ambitions were not realized.²⁵⁷ However, evidence regarding the Al Qaeda’s interest in pursuing biological toxins and poisons appears is more difficult to access.²⁵⁸

In a study conducted by the Center for Nonproliferation Studies at the Monterey Institute of International Studies (MIIS), cited by Jonathan Tucker in *Toxic Terror*, terrorist use of chemical and biological weapons was demonstrated.²⁵⁹ MIIS identified six characteristics among the groups involved in documented chemical/biological weapons (CBW) incidents: charismatic leadership, no external constituency, apocalyptic vision, loner or splinter group, sense of paranoia/grandiosity, and preemptive aggression.²⁶⁰ The two common characteristics that appeared in all cases of actual CBW use were the lack of outside constituency and a sense of paranoia/grandiosity. Only a limited number of groups were motivated enough to employ CBW, amongst them “religious millenarian groups, small terrorist cells, and brutalized groups seeking revenge or facing destruction.”²⁶¹

However, other non-state groups—including Hezbollah, the Chechen separatists, and group cults “not on anybody’s radar screen,” may also have an interest in acquiring

²⁵⁷ Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 6.

²⁵⁸ Ibid.

²⁵⁹ Jonathan Tucker, ed., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons* (Cambridge, MA: MIT Press, 2000).

²⁶⁰ Ehud Sprintzak, “The Great Superterrorism Scare” *Foreign Policy* Fall 1999; John Parachini, *Combating Terrorism: Assessing the Threat, Congressional Testimony (Prepared Statement) before the House Committee on Government Reform, Subcommittee on National Security, Veterans Affairs, and International Relations*, October 20, 1999.

²⁶¹ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*.

unconventional weapons for a mass-casualty terrorist attack.²⁶² Most terrorists assess nuclear and other forms of WMD terrorism through the lens of their political goals and may judge that it may, or may not, advance those political interests.²⁶³

Until recently, Hezbollah's stated goal was the withdrawal of the Israeli military from southern Lebanon.²⁶⁴ One report cite that some believe that Hezbollah's success of previous (conventional attacks) was due in great measure to its ability to learn and integrate new knowledge into its daily practices on multiple occasions. Hezbollah not only adopted new weapons and developed a sophisticated psychological warfare campaign; it also restructured itself to deal with increased Israeli pressure.²⁶⁵ In fact, Hezbollah's Secretary-General, Sayyed Nasrallah, recently announced the right to possess any weapon, which makes the nexus between the Iran-Hezbollah nexus critical, especially if Iran were to realize its nuclear ambitions.²⁶⁶

Also troubling, Hezbollah has been able to establish its own black-market infrastructure network to support its illegal activities (drug and weapons trafficking, smuggling contraband products, producing false documents, and money laundering) to general financial profits means to support its ideological motivations. Hezbollah's global activities demonstrate how easy it would be for other terrorists to tap into its knowledge or even the even its underground black market network itself.²⁶⁷

²⁶² Robert Litwak, *Assessing the Nexus of Proliferation and Terrorism*, Working Paper Grant #1050–1036, Ridgeway Center for International Security Studies, University of Pittsburgh, 2007, 5; also cited, these various non-state groups are discussed in Graham Allison, *Nuclear Terrorism: The Ultimate Preventable Catastrophe* (New York: Times Books/Henry Holt and Co., 2004), ch. 1.

²⁶³ Levi, *On Nuclear Terrorism*, 11.

²⁶⁴ Brian A. Jackson et al., *Aptitude for Destruction, Volume 2: Case Studies of Organizational Learning in Five Terrorist Groups* (Santa Monica, CA: RAND Corporation, 2005), <http://www.rand.org/pubs/monographs/MG332>, 37.

²⁶⁵ *Ibid.*, 40–41.

²⁶⁶ Al-ManarTV, "Sayyed Nasrallah: Hezbollah Has the Right to Possess Any Weapon," May 1, 2010, <http://www.almanar.com.news/NewsDetails.aspx?id=135786&language=en>.

²⁶⁷ Jackson et al., *Aptitude for Destruction, Volume 2: Case Studies of Organizational Learning in Five Terrorist Groups*, 48–51.

Understanding Iran's nuclear intentions assumes the added dimension of if and when Iran gets the bomb. A nuclear-armed Iran will pose new proliferation risks surrounding the possible transfer of nuclear capability and know-how from state to sub-state actors, such as Hezbollah and Hamas. Scant attention has been paid to the nuclear intent of surrogate groups and their collusion with Iranian insiders with access to nuclear facilities.²⁶⁸

Rather than inspire terror for the sake of achieving limited political objectives, today's terrorism is often fueled by extremist religious ideologies that rationalize destruction, vengeance, and punishment as both necessary ends in themselves and as tools to achieve a better world.²⁶⁹ Nuclear terrorism is most appealing to a group seeking highly visible and psychological results and that has little regard for the possible consequences.²⁷⁰

In addition to al Qaeda, the other strong possibility is apocalyptic groups whose faith entails a deep belief in the need to cleanse and purify the world via violent upheaval to eliminate non-believers and think they have some role in bringing about the end of the world.²⁷¹ These types of groups, driven by a religious passion, often have characteristics, such as charismatic leaders, isolation from the larger society, and a sense of paranoia and grandiosity that make them of a great concern as potential nuclear terrorists.²⁷² The Aum Shinrikyo cult, which was actively pursuing a WMD program, is the best example. The Cult's leader Shoko Asahara predicted a violent end to humanity, sparked by a nuclear cataclysm.²⁷³

Nationalist/separatist groups, whose purpose is focused on achieving some type of political objectives for a given ethnic group, would benefit from having a nuclear bomb by providing them with a huge boost to the credibility and reputation. The possession of a

²⁶⁸ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 10.

²⁶⁹ Hoffman, *Inside Terrorism*, 87–88.

²⁷⁰ Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2004, 26.

²⁷¹ *Ibid.*, 18

²⁷² *Ibid.*, 21.

²⁷³ *Ibid.*, 28.

nuclear device may give them a sense of being equivalent to a state.²⁷⁴ In 1995, Chechen rebels placed a radioactive container in a park in Moscow. Despite their proven ability to acquire radioactive material, they stopped short of detonating a “dirty bomb.”²⁷⁵

One such separatist group assessed as suspected of capability and willingness to use WMD is the Islamist separatists in the North Caucasus. For nearly two decades, these rebels have attempted to force Russian troops to retreat from Chechnya.²⁷⁶ However, in the past decade, radical Islam has transformed the conflict from primarily a struggle for independence to a “theater of operation in the broader global Islamist onslaught.”²⁷⁷ As the conflict continues to intensify in the region, it is increasing in both frequency and violence.²⁷⁸ The rise of insurgency in Russia’s Northern Caucasus threatens to destabilize the entire region as Russia continues to lose control, and as it becomes a significant base for Islamist terrorist organizations.²⁷⁹

The capabilities of these networks remain robust enough to prompt Russia’s political, security, and military leaders to continue acknowledging that the threat of nuclear terrorism remains real and serious.²⁸⁰ As demonstrated by some of their previous attacks, such the Beslan school attack,²⁸¹ the seizure of 700 patrons in a Moscow

²⁷⁴ Richard A. Falkenwrath, Robert D. Newman, and Bradley A. Thayer, *America’s Achilles Heel: Nuclear Biological, and Chemical Terrorism and Covert Attack* (Cambridge: MIT Press, 1998), 207–208.

²⁷⁵ Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2004, 29.

²⁷⁶ Simon Saradzhyan, *Russia: Grasping Reality of Nuclear Terror*, Discussion Paper 2003–02, International Security Program, Belfer Center for Science and International Affairs, Harvard Kennedy School, March 2003.

²⁷⁷ Ariel Cohen, *A Threat to the West: The Rise of Islamist Insurgency in the Northern Caucasus and Russia’s Inadequate Response*, The Heritage Foundation, March 26, 2012.

²⁷⁸ Michael Schwartz and Ellen Barry, “Medvedev Follows Lethal Attack on Islamic Separatists With Warning,” *The New York Times*, March 29, 2011.

²⁷⁹ Cohen, *A Threat to the West: The Rise of Islamist Insurgency in the Northern Caucasus and Russia’s Inadequate Response*.

²⁸⁰ Matthew Bunn, Yuri Morozov, Rolf Mowatt-Larssen, Simon Saradzhyan, William Tobey, Viktor I. Yesin, and Pavel S. Zolotarev, *The U.S.-Russia Joint Threat Assessment of Nuclear Terrorism* (Cambridge, MA: Report for Belfer Center for Science and International Affairs, Harvard Kennedy School, Institute for U.S. and Canadian Studies, June 6, 2011), 27.

²⁸¹ J. F. O. McAllister and Paul Quinn-Judge, “Defenseless Targets,” *TIME Magazine*, September 5, 2004. <http://www.time.com/time/magazine/article/0,9171,692846-1,00.html>.

theatre,²⁸² and the Moscow subway bombing,²⁸³ these groups demonstrate they are prepared to inflict massive, indiscriminate casualties, and make no distinction between state or civilian targets to obtain their political goals.²⁸⁴ The Chechen separatists have clearly crossed the moral threshold between conventional and catastrophic terrorism.²⁸⁵ As they increasingly struggle to put government forces on the defensive in the North Caucasus through acts of conventional terrorism and guerilla warfare, the motivation of more radical terrorist leaders to attempt acts of catastrophic terrorism increases. One researcher hypothesizes that since conventional attacks have not allowed rebels to achieve their goals, radical separatists may “see a catastrophic nuclear attack as their last chance to force Russia into leaving Chechnya,” and therefore, may resort to using WMD.

While the plot to hijack the atomic submarine and the scouting of military nuclear facilities demonstrate these groups’ intentions, it is the attacks, facilitated by turncoats and executed by well-trained, well-armed terrorists—some of them desiring to achieve martyrdom via suicide attack—that demonstrate their capability to attempt acts of WMD terrorism. However, while no current compelling evidence exists that North Caucasus groups have focused on acquiring the expertise needed to make a crude nuclear bomb from HEU or plutonium,²⁸⁶ nor enough credible evidence that Chechen rebels have, or trying to, assemble a WMD weapon.²⁸⁷ It could only be a matter of time before either Chechen-based radical separatists acquire such expertise to place the last link in the chain of causation.

²⁸² On the Media, “Terror in Moscow: Transcript,” October 24, 2003, <http://www.onthemedias.org/story/130589-terror-in-moscow/transcript/>.

²⁸³ Clifford J. Levi, “Moscow Attack a Test for Putin and His Record Against Terror,” *New York Times*, March 29, 2010.

²⁸⁴ Bunn et al., *The U.S.-Russia Joint Threat Assessment of Nuclear Terrorism*, 27.

²⁸⁵ Saradzhyan, *Russia: Grasping Reality of Nuclear Terror*, X.

²⁸⁶ Bunn et al., *The U.S.-Russia Joint Threat Assessment of Nuclear Terrorism*.

²⁸⁷ Saradzhyan, *Russia: Grasping Reality of Nuclear Terror*, 11.

The most likely terrorist groups to develop and use nuclear capability are political-religious groups trying to advance a larger political agenda,²⁸⁸ but who morally justify their actions through religious doctrine.

For apocalyptic thinkers, such as Osama bin Laden, Ayman Zawahiri, and Shogo Asahara, (Aum Shinryko's cult leader), nuclear weapons represent the "enabling element in waging a struggle in which ordinary rules of conduct do not apply." The religious pre-justification of WMD is "required" as part of a "ritualistic process for introducing new rules into the conflict." Apocalyptic jihadists hope a WMD attack would be seen by their constituency as a clear sign that "God is on our side"—victory is at hand.²⁸⁹ In fact, following the 9/11 attacks, al Qaeda released a video tape that referred to the 9/11 attacks as a "holy act."²⁹⁰

This great victory was possible only by the grace of God. This was not just a human achievement—it was a holy act. These nineteen brave men who gave their lives for the cause of God will be well taken care of. God granted them the strength to do what they did.

Al Qaeda's top leadership has made a sustained commitment to buy, steal, and develop fissile materials and expertise.²⁹¹ In 2002, Al Qaeda's documents supporting plans to obtain nuclear material were discovered during a raid in Afghanistan.²⁹² In 1988, Osama bin Laden called the acquisition of nuclear weapons or other WMD a "religious duty."²⁹³ Bin Laden's justification was that even WMD (which are outlawed under Islam) are a justifiable means of countering the West's monopoly of the bomb, the evil

²⁸⁸ As Chechen rebels become increasingly influenced by radical extremist factions, this group's profile is dynamic and characterization.

²⁸⁹ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 19.

²⁹⁰ Video released by Ayman Zawahiri and Osama Bin Laden "Zawahiri on 9/11 and the 19 Martyrs," as cited in Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*.

²⁹¹ Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2004, 19.

²⁹² David Albright, "al-Qaeda's Nuclear Program: Through the Window of Seized Documents," *Nautilus Institute Special Forum* 47, November 6, 2002.

²⁹³ Rahimullah Yusufzai, "Interview with Bin Laden: World's Most Wanted Terrorist," *ABC News On-line*, January 1999, <http://cryptome.org/jya/bin-laden-abc.htm>.

political power of the United States,²⁹⁴ and to “prevent the infidels from inflicting harm on Muslims.”²⁹⁵

Of note were the actions of Ayman Zawahiri—Bin Laden’s second in command in charge of operations. Both Bin Laden and Zawahiri shared a common belief that nuclear weapons would be desired for an “impending conflict” with the United States.²⁹⁶ By 1992, reports are that al-Qaeda were already actively exploring opportunities to buy, build, or steal a bomb,²⁹⁷ although, their efforts during this period were only met by a series of scams and were ultimately unsuccessful. During the 1990s, Zawahiri traveled a great deal. During this period, it is rumored that in while in Afghanistan, Zawahiri may have been offered assistance by Khan’s network.²⁹⁸ Moreover, shortly before the 9/11 attacks, bin Laden and Ayman al-Zawahiri met with two senior Pakistani nuclear scientists to discuss nuclear weapons.²⁹⁹ Also, during this period, Zawahiri and his top lieutenants traveled extensively to Russia, Yemen, Malaysia, Singapore, and China. His associations during his travels, and own statements, suggest that he and his cohorts may have been hunting for WMD.³⁰⁰

When the secret planning for 9/11 began, it was Zawahiri who personally directed al Qaeda’s development of chemical, biological, and nuclear programs. Additionally, the sophisticated anthrax project was also in late fall 2002. A terrorist cell associated with al-Qaeda completed planning for a chemical attack on the New York City subway by utilizing a cyanide gas dispersal device called the “mob-taker.” Operatives sought permission from the al-Qaeda core to execute the attack. Ayman Zawahiri, who was

²⁹⁴ Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 5.

²⁹⁵ For an English translation of this fatwa, see Al-Fahd, “A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels.”

²⁹⁶ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 29.

²⁹⁷ *Ibid.*, 29–30.

²⁹⁸ David Albright and Holly Higgins, “A Bomb for the Ummah,” *Bulletin of the Atomic Scientists* 59, no. 2 (March/April 2003): 113.

²⁹⁹ *Ibid.*, 49–55. For a more detailed account, see David Albright and Holly Higgins, *Pakistani Nuclear Scientists: How Much Nuclear Assistance to Al Qaeda?* (Washington, DC: Institute for Science and International Security, 2002), <http://www.exportcontrols.org/pakscientists.html#back29>.

³⁰⁰ Lawrence Wright, “The Man Behind Bin Laden,” *The New Yorker*, September 16, 2002.

unaware of the plan in its earlier planning stages, called off the attack because he had “something better” in mind run personally by Zawahiri.³⁰¹ However, while Zawahiri was involved in the operational aspects of the planning and development, he has also made it his mission to develop the religious case for using WMD.³⁰²

In May 21, 2003, a Saudi cleric issued a fatwa on “A Treatise on the Legal Status of WMD Against Infidels.”³⁰³ However, after its release and its subsequent recantation, the status and meaning of the fatwa became unclear. Nonetheless, Zawahiri used this situation as an opportunity to reiterate his support for WMD terrorism. In March 2008, Ayman Zawahiri responded directly to Dr. Fadl with a book of his own posted on the Internet, entitled *Exoneration*. Zawahiri goes to great lengths to refute, essentially thought by thought, Dr. Fadl’s text.³⁰⁴ Indeed, Zawahiri tended to expand on the thoughts and ideas of al-Fahd by diving into a more comprehensive justification with even further citations.³⁰⁵

For al-Qaeda, procuring a fatwa is part of a ritual process for an impending attack. The 1998 fatwa was issued in support of 9/11. The 2003 fatwa was published to accompany concrete operational planning underway at that time. In 2008, Zawahiri’s purpose is to issue a warning of an impending attack.³⁰⁶ As a cleric, al Fahd likely did not know the operational intent that rested behind his legal argument. However, Zawahiri makes his case for WMD on both religious and operational levels. As in bin Laden’s 1998 fatwa, Zawahiri serves as both cleric and operational planner and understands the specific purpose for which the fatwa is being issued.³⁰⁷

³⁰¹ *The Terrorist Threat to the U. S. Homeland, National Intelligence Estimate*, July 2007. Also cited in Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 30.

³⁰² Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 31.

³⁰³ Nasir al-Fadh “A Treatise on the Legal Status of Using Weapons of Mass Destruction Against Infidels,” May 2003, <http://www.carnegieendowment.org/static/npp/fatwa.pdf>.

³⁰⁴ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 34.

³⁰⁵ *Ibid.*, 35.

³⁰⁶ *Ibid.*, 38.

³⁰⁷ *Ibid.*

E. WMD UNDER AL QAEDA'S NEW LEADERSHIP

On June 16, 2011, al-Qaeda announced that al-Zawahiri had been selected as bin Laden's successor.³⁰⁸ Since his ascension of Aymen Zawahiri to the senior leadership role in Al Qaeda Central, evidence (i.e., specific directive, public statement, or video tapes released) is lacking to sustain whether Zawahiri still intends to follow the fatwa he issued in 2003 and whether al Qaeda is actively pursuing WMD for operational use in an upcoming attack. However, Zawahiri's long-term interest in the use of WMD and the role he played in the pursuit of developing al Qaeda WMD capability while working as a second in command cannot be ignored now that he is the leader.

Assessments of whether al Qaeda will conduct an attack, agree that the intent remains but that the ability to pull off planning such a large-scale WMD attack may have been compromised by the Killing of Osama bin Laden.³⁰⁹ Nevertheless, these "remaining few leaders can still serve as the key drivers of al-Qaeda's nuclear ambitions." A recent report entitled, *Islam and the Bomb*, the author Rolf Mowatt-Larssen says that this nation should be especially worried about the threat of nuclear terrorism under Zawahiri's leadership.³¹⁰ As the former director of intelligence and counterintelligence at the U.S. Department of Energy, Mowatt-Larssen argues that al-Qaeda's WMD ambitions are "stronger than ever." Moreover, "this intent no longer feels theoretical, but operational."³¹¹ "We must remember that Zawahiri's arrogance and rigidity are not substitutes for determination and will."³¹²

1. Motivation

The question remains, why go nuclear when other WMD methods may be easier to achieve? A nuclear weapon is not required to inflict mass casualties. The 9/11 tactics killed over 3,000 people and the Oklahoma City bombing killed more people than any

³⁰⁸ Lee Ferran, "al Qaeda Named Osama Bin Laden Successor," *ABC News*, June 16, 2011.

³⁰⁹ Bunn et al., *The U.S.-Russia Joint Threat Assessment of Nuclear Terrorism*, 47.

³¹⁰ Ibid.

³¹¹ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 4.

³¹² Rahim Kanani, "New al-Qaeda Chief Zawahiri Has Strong Nuclear Intent," *Forbes*, June 29, 2011.

WMD attack by a terrorist group so far.³¹³ However, nuclear terrorism has a different fear factor and attracts much more publicity. Nuclear terrorism has the feature of achieving a unique type of public fear and trauma because of the negative association with almost anything nuclear. In addition to the sheer destructive impact of a nuclear explosion, the aura of fear and myth surrounding nuclear weapons holds unique psychological impact.³¹⁴

From a motivational standpoint, the acquisition of a working nuclear weapon would represent the ultimate capability for apocalyptic and political-religious terrorism.³¹⁵ For a political-religious group, such as Al-Qaeda, the desire to control a weapon is two-fold: First, announcing the acquisition of a nuclear weapon would have an extraordinary psychological effect on the target audience. The credible threat caused by a terrorist group controlling a nuclear weapon would significantly bolster any political goals of the group and may lead to greater political capital. Second, both threatening to use the device, as well as actually strategically choosing to detonate that device, would both hold great political value. The psychological impact would be devastating and impact on survivors overwhelming.³¹⁶ Brian Jenkins, in his thesis, states what he calls the “fission of fear.” By creating that fear in the imagination of the public, a terrorist organization, such as Al Qaeda, may become a terrorist nuclear power, without possessing a single nuclear weapon.³¹⁷

As Ken Waltz writes:

If we believe that terrorists could, if they wished to, wield nuclear weapons to threaten or damage their chosen enemies, then the important question becomes: Why would they want to? To answer this question, we have to ask further what terrorists are trying to do and what means best suits their end.³¹⁸

³¹³ Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2004, 23.

³¹⁴ Ibid., 27.

³¹⁵ Ibid., 21.

³¹⁶ Ibid., 22.

³¹⁷ Jenkins, *Will Terrorists Go Nuclear?*.

³¹⁸ Sagan and Waltz, *The Spread of Nuclear Weapons*, 95.

Over the last decade, many experts argue that terrorists are escalating their destructiveness.³¹⁹ Researchers suggest that religious-inspired terrorists will be the most likely non-state perpetrators to use WMD due to a combination of new motives, different rationales, and increased opportunities coupled with enhanced terrorist capabilities, may lead to a new era of terrorist violence more dangerous and deadly than in the past.³²⁰ Groups can stage devastating attacks using cheap and simple means, providing that those weapons or supporting technologies are appropriate to the goals the terrorist is seeking to achieve. In reality, the critical question is to start asking questions regarding what they hope to achieve.

However, the motivations of political/separatist may vary slightly. Long-term conflicts and emotional motivation may evolve to accompany political goals. For instance, in the Chechen separatists' movement, on-going warfare and high civilian casualties (often of family members) has made the separatists vengeful, and as such, turned the fight from one of independence to a quest for revenge against those who have wronged them,-a so-called "blood vendetta."³²¹

So far, no precedence for a nuclear attack or major WMD attack has been set, and terrorist groups have had limited experience with any sort of WMD use; however, in general, terrorist groups, such as Al Qaeda, have demonstrated their willingness to make attacks larger and more dramatic.³²² Although 9/11 ultimately used conventional means, the deployment of commercial airline into building was a new idea. Indeed, it was this type of thinking that was not routinely comprehended by analysts.

2. Strategic and Tactical Considerations

Homeland security threat assessments are consistent in assessing terrorists as strategic actors. They choose their targets deliberately based on "the weaknesses they

³¹⁹ Ian O. Lesser, Bruce Hoffman, John Arquilla, David Ronfeldt, Michele Zanini, and Brian Michael Jenkins, *Countering the New Terrorism* (Santa Monica, CA: RAND Corporation, 1999), 10–28, 71.

³²⁰ Bruce Hoffman, "Terrorism and WMD: Some Preliminary Hypothesis," *Nonproliferation Review*, Spring–Summer 1997.

³²¹ Saradzhyan, *Russia: Grasping Reality of Nuclear Terror*, 30–31.

³²² Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2004, 14–15.

observe in our defenses and our preparedness.”³²³ Most terrorist groups access nuclear terrorism through the lens of their political goals and many judge that it does not advance their interests. Others may believe it would advance their goals under certain circumstances.³²⁴ However, terrorists may also weigh the risk of failure. Most who have studied terrorist decision making do not conclude that groups would be as willing to risk everything in pursuit of “spectacular results.”³²⁵ Bruce Hoffman furthers the operational argument by arguing that most terrorist groups are quite tactically conservative—“the organizational imperative to succeed imposes on some terrorist groups an operational conservatism that make an ironic contrast with their political radicalism.”³²⁶

A plan to resort to some type of nuclear terrorism might not merely reflect a strategic decision—it might also be the result of organizational dynamics, ease of access to needed materials/targets, successful use elsewhere, or a leader’s obsession of holding the nuclear card.³²⁷ The assistance that the Pakistani nuclear scientist reportedly offered to Al Qaeda is an important case in point, as it would provide the terrorists with the technical personnel to explain and potentially operationalize some of the materials they were already collecting about nuclear capabilities and weapons, which makes it possible for them to make their rhetoric about wanting nuclear weapons a reality.³²⁸

Many terrorism experts include an analysis regarding the importance of strategic thinking and operational risks on terrorist decision making. It appears “terrorist actors are often concerned about ‘operational risk’—they may be willing to risk or give their lives, but not for a futile attack.”³²⁹

The organizational approach suggests a terrorist organization’s main goal is “survival,” like any other organization, such as a state institution or a commercial

³²³ National Homeland Security Strategy, 2002, executive summary, vii.

³²⁴ Levi, *On Nuclear Terrorism*, 11.

³²⁵ Ibid.

³²⁶ Hoffman, *Inside Terrorism*, 249.

³²⁷ Ferguson and Potter, *The Four Faces of Nuclear Terrorism*, 2004, 29.

³²⁸ Albright and Holly Higgins, “A Bomb for the Ummah,” 49–55.

³²⁹ Paul K. Davis and Brian Michael Jenkins, *Deterrence and Influence in Counterterrorism* (Santa Monica, CA: RAND Corporation, 2002), 16.

enterprise. Hence, this approach explains terrorism as a result of an organization's struggle for survival, usually in a competitive environment.³³⁰ In fact, "many terrorist organizations also appear to be risk-adverse, instead the emphasis is often on the group's survival."³³¹

The importance of operational success of a terrorist group is critical. Certain terrorist operations are much harder to execute successfully than others. For instance, detonating an improvised explosive device (IED) in a public park is more difficult than setting off an IED in a secured government building. Alternatively, constructing a pipe bomb is less technically challenging than building an improvised nuclear explosive device. A group that aims to do the first objective, rather than the latter, increases its chances of success. Although thinking about the ability for a terrorist groups' chances of success (or failure) usually focus on the nature of the group or individuals involved, whether they are "good enough" to stage a particular operation depends on what they are trying to accomplish.³³²

The threat of WMD terrorism may not be posed by the availability of weapons or the weapons themselves, but is rather evolves from the nexus between available weapons, tactical capabilities, and the desire, capacity, and ideological inclination within a group to execute an attack.³³³ A recent RAND report analyzes the factors that must be present for a terrorist attack to have the greatest chance of success. The findings suggest that the analysis must be examined within the context of the "match or mismatch" of three key characteristics: (1) terrorist group capabilities and resources, (2) the requirements of the operation it attempted or is planning to attempt, and (3) the relevance and reliability of security countermeasures. For a terrorist attack to have the greatest chance of success, the

³³⁰ Martha Crenshaw, ed., *Terrorism in Context* (University Park, PA: Pennsylvania State University Press, 1995).

³³¹ Cameron, *Nuclear Terrorism: A Threat Assessment for the 21st Century*, 60–61.

³³² Brian A. Jackson and David R. Frelinger, *Understanding Why Terrorist Operations Succeed or Fail* (Santa Monica, CA: RAND Corporation, 2009), http://www.rand.org/pubs/occasional_papers/OP257, 12.

³³³ David W. Brannan, Philip F. Esler, and Anders Strindberg, "Talking to "Terrorists": Towards an Independent Analytical Framework for the Study of Violent Sub-state Activism," *Studies in Conflict & Terrorism*, 24 no. 1 (2001): 3–24.

following is necessary: (1) a match between its capabilities and resources and the operational requirements of the attack it is seeking to conduct, and (2) a mismatch of security countermeasures and intelligence/investigative efforts with both the group and its plans.³³⁴ The operational requirements of an operation are driven in large part by the tactical outcome the group wants and the type of target it is attacking.³³⁵ Decisions about what type of attack, what tactics it will use, how many people it targets, what type of attention it seek goes to the nature of what groups are seeking to accomplish.³³⁶ Success will in turn be affected by capability and will ultimately inform strategic decisions and vice versa.

Brian Jenkins notes that for al Qaeda, in particular, that operations must be successful. He draws this conclusion from a religious perspective theorizing that, “Jihadists believe that God’s will is expressed in success and failure is to have God’s support.”³³⁷

F. CAPABILITY VS. INTENT—DO THEY MATCH?

No dispute has been raised that accessing nuclear weapons—either by theft or construction—while not impossible, does pose great difficulty for terrorist groups. Motivation alone cannot close the gap to nuclear terror, as it will also take a great deal of technical expertise and operational capability to achieve. Nevertheless, two former senior government counterterrorism officials argue that the “confluence of religiously inspired terrorism and technological diffusion will impel terrorists to overcome technical, organizational and logistical obstacles to WMD use.”³³⁸

The key obstacle to building such a weapon is the availability of a sufficient quantity of special nuclear material (SNM) material—either plutonium or HEU. Some

³³⁴ Jackson and Freling, *Understanding Why Terrorist Operations Succeed or Fail*, ix.

³³⁵ Ibid.

³³⁶ Ibid., 11–13.

³³⁷ Brian Michael Jenkins, *Unconquerable Nation: Knowing Our Enemy, Strengthening Ourselves* (Santa Monica, CA: RAND Corporation, 2006), 81.

³³⁸ Steven Simon and Daniel Benjamin, “America and the New Terrorism,” *Survival* 42, no. 1 (Spring 2000), 72.

experts believe that if allowed access to the necessary quantities of fissile material, extraordinarily capable groups could build a crude nuclear weapon. “Once you have the fissile material, it’s a matter of basic chemistry, basic machinery and a truck.” “You have to have some technical capability, but once you have those skills, it’s certainly within the grasp of the kind of sophisticated, planning-capable terror organizations out there.”³³⁹

Experts have acknowledged the potential for non-state actors to build an IND for many years, and most concur with the view of the U.S. National Research Council that “crude HEU weapons could be fabricated without state assistance.” Much less agreement occurs among specialists, however, about how technically competent terrorists would have to be to make even a crude device or how large a team they would need.³⁴⁰

It is for this reason that the Khan proliferation network was so dangerous. By acting as a middleman to provide the material and expertise, he was able to help states, and perhaps terrorists, cross the threshold into nuclear capability. The A.Q. Khan network was essentially “an enabler” of the proliferation that fueled hostile nations and terrorist groups with the means to carry out nuclear attacks. The role Khan played was a dangerous role in that he was the link between turning “intent” into a “capability;” essentially, turning nuclear aspirations into nuclear realities.

The correlation between the technology and the groups’ skills, and what the group is trying to do, is critical.³⁴¹ To understand terrorist success and failure, it is therefore necessary to understand the characteristics of different operations that make them difficult or risky—and also therefore, raise the bar for group skills, technology, and so forth.

During raids in Afghanistan, evidence surfaced that Al Qaeda was aggressively pursuing chemical, biological, radiological, and nuclear information and material.”³⁴²

³³⁹ Linzer, “Nuclear Capabilities May Elude Terrorists, Experts Say,” A01.

³⁴⁰ National Research Council, *Making the Nations Safer: The Role of Science and Technology in Countering Terrorism* (Washington, DC: National Academy Press, 2002), 45.

³⁴¹ Jackson and Freling, “Understanding Why Terrorist Operations Succeed or Fail,” 8.

³⁴² Jim Garamone, “Wolfowitz Says Dirty Bomb Plot Highlights WMD Dangers,” *American Forces Press Service*, June 11, 2002.

Although Al Qaeda's nuclear aspirations have been detailed, this new evidence suggested that their CBW capability might have been more advanced than in the nuclear realm. One such piece of evidence comes from a 10 volume "Encyclopedia of Afghanistan Resistance," which was found while coalition forces were inspecting a camp close to Jalalabad. The encyclopedia contains precise formulas for manufacturing toxins, botullinum, and ricin. The document also instructs would-be perpetrators in methods of disseminating the deadly materials.³⁴³ Ahmed Ressay, an Algerian man accused of planning to bomb the Los Angeles airport, testified that al Qaeda taught him to poison people by putting toxins on doorknobs, and that he engaged in experiments in which dogs were injected with a mixture containing cyanide and sulfuric acid.³⁴⁴ What can be concluded from captured documents, media reports, and U.S. government statements is that al Qaeda has obtained chemical agents, albeit probably in small quantities, and performed experiments on live subjects to determine the lethality of the substances. Manuals and testimony also indicate that al Qaeda has determined how to operationalize chemical and biological warfare.³⁴⁵

On the nuclear front, Stephen Younger, director of the Defense Threat Reduction Agency, said extensive searches in Afghanistan showed Al Qaeda was interested in nuclear technologies, as well as biological and chemical weapons. Specifically, that "Al Qaeda leaders may have connections in other countries that already have the technological base for building nuclear weapons. They have the money to make such links...and they may have...access to people in countries with advanced technological capability."³⁴⁶ In February 2004, Tenant noted, "more than two dozen terrorist groups are

³⁴³ CNN, "Al Qaeda Documents Reveal Depths of Terror," 2001, <http://edition.cnn.com/SPECIALS/2001/trade.center/interactive/al.qaeda.documents/frameset.exclude.html>.

³⁴⁴ Craig Pypes, "Canada Adds Details on Algerians' Suspected Bomb Plot," *The New York Times*, January 21, 2000, <http://www.nytimes.com/2000/01/21/world/canada-adds-details-on-algerians-suspected-bomb-plot.html>; Intelwire.com, "Government's Sentencing Memorandum; U.S. v. Ressay," April 20, 2005, <http://intelfiles.egoplex.com/ressam-sentencing-memo.pdf>.

³⁴⁵ *Complaint; U.S. v. Ressay*, NEFA Foundation, December 1999.

³⁴⁶ Associated Press, "Pentagon Worried Al Qaeda May Get Nukes," July 18, 2002, <http://www.foxnews.com/story/0,293358038,00html>.

pursuing CBRN materials.”³⁴⁷ In particular, Aum Shinrikyo and Al Qaeda and its associates figure most prominently among the groups that have manifested some degree of intent, experimentation and programmatic efforts to acquire nuclear weapons.³⁴⁸ To date, only these two groups have been able to achieve the scale of operations required to mount serious unconventional weapons programs.

Aum Shinrikyo, the Homegrown Japanese cult, was able to elude intelligence agencies as they actively sought to develop nuclear, biological, and chemical weapons.³⁴⁹ Aum Shinrikyo managed to conduct the most significant terror attack by using WMD when the group’s followers released sarin gas on the Tokyo subway system. Although Aum Shinrikyo failed to yield the catastrophic results it was looking for, it nonetheless possessed financial and technical capability. Investigations after the dissolution of the group clearly showed that the group attempted to mine its own uranium in an attempt to gain weapons-grade nuclear material.³⁵⁰

It is important to note that while the “desire” of AQ to acquire WMD is well documented in the literature, the assessments of its capability to actually acquire, fashion, and deploy such a weapon remain skeptical and inconsistent but summarized in the realm of “difficult” and unlikely but not improbable.

The Central Intelligence Agency has reported that it is likely that most terrorists will continue to choose conventional explosives over WMD, but warns that the al-Qaeda network remains the greatest concern for the terrorist use of nuclear or other WMD weapons.³⁵¹ The 9/11 Commission report documented Al Qaeda’s attempts to acquire

³⁴⁷ Testimony of George Tenet, *The Worldwide Threat 2004: Challenges in Changing the Global Context*, “before the Senate Select Committee on Intelligence, February 24, 2004.

³⁴⁸ Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality?*, 5.

³⁴⁹ Bunn, “Nuclear Terrorism: A Strategy for Prevention,” in *Going Nuclear: Nuclear Proliferation and International Security in the 21st Century*.

³⁵⁰ Sara A. Daly, John V. Parachini, and William Rosenau, “Aum Shinrikyo, Al Qaeda, and the Kinshasa Reactor: Implications of Three Case Studies for Combating Nuclear Terrorism,” *RAND Corporation*, 2005, http://www.rand.org/pubs/documented_briefings/DB458.

³⁵¹ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, 112–113.

WMD capability.³⁵² In Chapter 4 (?) of the report, officials in 1998 discussed reports that Bin Laden's associates thought their leader was intent on carrying out a "Hiroshima."³⁵³

Documents and interrogations from military operations in Afghanistan have reinforced the assessment that the Taliban sought, and al-Qaeda, continues to seek, to develop biological weapons and obtain radioactive material for a radiological weapon.³⁵⁴ The FBI's National Infrastructure Protection Center (NIPC) warned that "Al Qaeda and affiliated groups continue to enhance their capabilities to conduct effective mass-casualty chemical, biological, radiological, and nuclear (CBRN) attacks" and that Al Qaeda possesses "at least a crude capability to use" CBRN weapons.³⁵⁵ In 2003, 9/11 mastermind Khalid Sheikh Mohammed is captured in Pakistan, along with Ahmed Abdul Qadus Khan. Confronted with the evidence found during the raid, KS Mohammad provides confirming information on al Qaeda's nuclear and biological weapons programs,³⁵⁶ and subsequent (leaked) documents show proof of Al Qaeda's intention to detonate a "weapon of mass destruction" should Osama Bin Laden be killed or captured.³⁵⁷

G. THE GROWING RISKS

1. Nuclear Black Markets

The lifeline for these illicit efforts is a nuclear black market comprised of skilled manufacturers, engineers and scientists, middlemen, and transportation and logistics channels all available for a price.

³⁵² 9/11 Commission Report.

³⁵³ Ibid., ch. 4.

³⁵⁴ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, 112–113.

³⁵⁵ National Infrastructure Protection Center, *Homeland Security Information Update: Al Qaeda Chemical, Biological, Radiological, and Nuclear Threat and Basic Countermeasures*, Information Bulletin 03-003, February 12, 2003.

³⁵⁶ Mowatt-Larssen, *Al Qaeda Weapons of Mass Destruction Threat: Hype or Reality*, 26. This report uses several specific examples of Al Qaeda's attempts to acquire nuclear weapons between 1995 and 2009.

³⁵⁷ See Christopher Hope, "WikiLeaks: Guantanamo Bay Terrorist Secrets Revealed," *London Telegraph*, April 25, 2011; News.yahoo.com, "Nuclear Hellstorm if Bin Laden Caught: 9/11 Mastermind," April 25, 2011.

The fear of nuclear materials being available on the black market followed the collapse of the Soviet Union. On November 14, 2001, President Bush met Russian President Vladimir Putin and passed the Presidential Daily Brief containing an assessment of the proliferation threat. Bush asked Putin if he is certain that all Russian nuclear weapons and materials were secure. Putin responded with words to the effect: “I can only vouch for the security of nuclear materials in Russia after I assumed power.”³⁵⁸

Since the collapse of the Soviet Union in 1991, long-standing concern has existed about the possibility of WMD proliferation to terrorists from the former Soviet states in which old research, production, and storage facilities remain with questionable safety and security procedures. A distressed Russian economy has created an opportunistic environment and led to a healthy black market to purchase fissile material, which increased the risk of an insider threat. Perhaps more significant, however, is the possibility that, given the ongoing travails of the Russian economy, poorly paid, disgruntled former Soviet scientists might attempt to sell their expertise in chemical, biological, and nuclear weapons on the “open market” to terrorists or rogue states.³⁵⁹ In short, a “vast supermarket of WMD material, hardware, and know-how had been opened as a consequence of the Soviet Union’s demise and presented the post-Cold War world with an enormous and immediate challenge.”³⁶⁰ Concerns about the proliferation from Soviet nuclear, biological, and chemical weapons facilities intensified in the wake of the

³⁵⁸ George Tenet, *At the Center of the Storm* (New York: HarperCollins, 2007), 272.

³⁵⁹ See Graham T. Allison et al., *Avoiding Nuclear Anarchy: Containing the Threat of Loose Russian Nuclear Weapons and Fissile Material* (Cambridge, MA and London: MIT Press, 1996), passim; Carnegie Corporation of New York, “Heading Off A New Nuclear Nightmare: Illicit Trade in Nuclear Materials, Technology, and Know-How,” *Carnegie Quarterly* xii, nos. 2–3 (Spring–Summer 1996), 1–7; CSIS Task Force Report, *Global Organized Crime Project, The Nuclear Black Market* (Washington, DC: Center for Strategic and International Studies, 1996), passim; Falkenrath et al., *America’s Achilles’ Heel*, passim; Stern, *The Ultimate Terrorists*, 89–106; Peter Chalk, “The Evolving Dynamic of Terrorism,” *The Australian Journal of International Affairs* 53, no. 2 (1999): 163.

³⁶⁰ As characterized by William Potter, MIIS, in his comments before a conference in December 12, 2011 looking at the progress of the Nunn-Lugar. Transcript in full available at Richard G. Lugar and Sam Nunn, “Nunn-Lugar at 20: Assessing America’s Progress on Risk Reduction and Terrorism Prevention,” *NTI*, December 12, 2011, <http://www.nti.org/analysis/transcripts/nunn-lugar-20-assessing-americas-progress-risk-reduction-and-terrorism-prevention/>.

financial crisis that began in Russia in August 1998.³⁶¹ Reports of Russian nuclear materials for sale on the black market, when combined with evidence of weaknesses in the security systems, have raised long-standing concerns about the possible theft or diversion of nuclear materials from these facilities.

Indeed, despite efforts made in Russia to protect nuclear stockpiles, recent seizures show that it is still a serious concern. Seizures or attempted thefts of weapons-grade material, uranium or plutonium, have been documented in the region since the Soviet Union collapsed. In every case, the material seized had not been missed and mostly the theft was made by an insider. A recent case in Georgia was shared with delegates to a NPR. Most details of the trial were kept confidential but wanted to demonstrate a real and current threat to those gathered to do next step.³⁶² According to one researcher, “There has never been a good physical inventory. Accounting rules in the Soviet Union were not designed with an internal threat in mind,” The researcher continued to say, “No one registered that this material was missing and we still don’t know whether other material went missing.”³⁶³ Indeed, this exponentially complicates preventing the materials on the black market.

According to the one such study, the WMD black market consists of three types of proliferators: “willful proliferators,” such as A.Q. Kahn who intentionally sells sensitive information for profit, “willfully blind proliferators” who should know that their skills and materials may be used to advance a bomb-making program but fail to take due diligence to prevent such acts, and finally, “ignorant proliferators” who genuinely do not understand the consequences of their actions.³⁶⁴ Each of these scenarios takes advantage of opportunities in the supply chain and flourishes within an environment of lax government oversight and security mechanisms.

³⁶¹ U.S. Library of Congress, Congressional Research Service, *Nunn-Lugar Cooperative Threat Reduction Programs: Issues for Congress*, by Amy F. Woolf, CRS Order Code 97-1027 F (Washington, DC: Office of Congressional Information and Publishing, November 17, 2003), 3–5.

³⁶² Julian Borger, “Nuclear Bomb Material Found for Sale on Georgia Black Market,” *The Guardian*, November 7, 2010, <http://www.guardian.co.uk/world/2010/nov/07/nuclear-material-black-market-georgia>.

³⁶³ *Ibid.*

³⁶⁴ *Orienting the 2009 Nuclear Posture Review*, American Progress Report Center for American Progress, November 2008, 5.

The nuclear trading network of A.Q. Khan , the so-called father of the Pakistani bomb, marked a new front of nuclear terrorism. The network was able to expand its operation into a transnational illegal network to export gas-centrifuges, and production capabilities, as well as designees for nuclear weapons.³⁶⁵ For the first time, an individual—not a state—created a multi-national business that provided nuclear materials and technology to any willing buyer.³⁶⁶ The nuclear smuggling network managed to buy and sell nuclear weapons capabilities for two decades while eluding the world’s intelligence agencies and non-proliferations institutions. A.Q. Khan admitted to selling equipment and expertise to Iran, Libya, and North Korea³⁶⁷ and widely speculated it may have consulted with Syria. It is also known to have approached Al Qaeda with an offer to nuclear secrets prior to the fall of the Taliban in Afghanistan.³⁶⁸ His visits to Afghanistan during this period have added to suspicions that Khan may have offered nuclear aid to Al Qaeda or other terrorist organizations based in Afghanistan at the time.³⁶⁹

The Khan network demonstrated many things, such as a demand for nuclear supplies and equipment and knowledge existed, which could support an illegal black market with significant profits, that an illegal underground black market for WMD supplies could flourish, and that a transnational operation could operate without detection long enough to cause significant damage without detection from U.S. intelligence. Members of the network knew how to exploit loopholes in the export control system. Khan is said to have been motivated by financial gain by selling to mostly Muslim-

³⁶⁵ Albright and Henderson, “Unraveling the A.Q. Khan Network and Future Proliferation Networks,” 112.

³⁶⁶ “The Khan Network.” Paper by David E. Sanger, White House correspondent for the *New York Times*. Presented at the Conference on South Asia and the Nuclear Future held June 4–5, 2004 at Stanford University sponsored by the Center for International Security and Cooperation and the U.S. Army War College.

³⁶⁷ Albright and Hinderstein, “Unraveling the A.Q. Khan Network and Future Proliferation Networks,” 116.

³⁶⁸ Ibid.

³⁶⁹ Ibid., 113.

countries. In addition to money, Khan may have also been motivated by pan-Islamism and hostility to Western controls on nuclear technology.³⁷⁰

As the head of the Atomic Energy Agency, Mohamed ElBaradei said, “The information is now all over the place....as a result, it now seems far more likely that, sooner or later a rouge state or terror group will be able to obtain the ingredients and the designs for nuclear weapons.”³⁷¹ A consensus that the A.Q. Kahn network has not really been shut down but is in hibernation seems to be growing among experts. Other proliferation networks may also exist.

Active state sponsors are probably the least likely scenario as conscious state decisions to provide nuclear material or weapons to terrorists is unlikely given that they would have to consciously decide to give up such a power once developed, even for (relative) modest financial gain. Given that, such an act would be disastrous.³⁷² A 1997 assessment made by the U.S. Department of Defense Intelligence Agency (DIA) states), states, “Most of the state sponsors have chemical or biological or radiological material in their stockpiles and therefore, have the ability to provide such weapons to terrorist if they wish. However, we have no conclusive information that any sponsor has the intention to provide these weapons to terrorists.”³⁷³ That assessment was consistent with a 2010 assessment, which said, we do not know of any states deliberately providing CBRN assistance to terrorist groups. Although terrorist groups and individuals have sought out scientists with applicable expertise, no corroborated reporting indicates such experts have

³⁷⁰ William J. Broad, David Sanger, and Raymond Bonner, “A Tale of Nuclear Proliferation: How Pakistani Built His Network,” *New York Times*, February 12, 2004.

³⁷¹ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, 130.

³⁷² Matthew Bunn, “Securing the Bomb 2010, Securing All Nuclear Materials in Four Years, Project in Managing the Atom,” Project on Managing the Atom, Commissioned by the Nuclear Threat Initiative, *Belfer Center for Science and International Affairs, Harvard Kennedy School*, April 2010, <http://www.nti.org/securingthebomb>.

³⁷³ Quoted in Seth Carus, *Bioterrorism and Biocrimes: The Illicit Use of Biological Agents Since 1900*, Center for Counterproliferation Research, National Defense University, September 1, 2002, 37.

been able to develop advanced CBRN capability with the permission of any state sponsorship or government.³⁷⁴

The specter of a nuclear, chemical, or biological attack by a terrorist group based in a failed state requires the development of capacity not just in states unable to exert effective control over territory, but also in those states that are potential sources of proscribed WMD-related technologies. Leakage of WMD technologies or expertise, rather than a direct transfer as an act of state policy, is the more probable route by which a terrorist group might acquire such capabilities for a mass-casualty attack and must be taken into account when developing counterproliferation strategies.³⁷⁵ In short, more states in possession of nuclear technology, material and expertise, increase the likelihood of terrorists being able to acquire the means to produce WMD. Countries with WMD capabilities and expertise, whether hostile or failed, present a particular vulnerability for terrorists to exploit. States also provide unintended opportunity. For instance, porous borders also provide a convenient route for illegal trafficking in drugs, weapons, people, and even nuclear materials, such as those in the in the North Caucasus region,³⁷⁶ or Pakistan.³⁷⁷

2. The Convergence between WMD-related Material Trafficking and Transnational Criminal Organizations

Revelation about the A.Q. Kahn network also fueled new concerns about the merging of international terrorist organizations with transnational organized crime. Many experts acknowledge that clear overlaps exist between international terrorist and

³⁷⁴ *Annual Threat Assessment of the U.S. Intelligence Community, Statement for the Record by Dennis C. Blair, Director of National Intelligence, Senate Select Committee on Intelligence*, February 2, 2010, 12.

³⁷⁵ Litwak, *Assessing the Nexus of Proliferation and Terrorism*, 12–13.

³⁷⁶ Ariel Cohen, *A Threat to the West: The Rise of Islamist Insurgency in the Northern Caucasus and Russia's Inadequate Response*, March 26, 2012.

³⁷⁷ U.S. Department of State, *Country Reports on Terrorism*, “Chapter 1-Strategic Assessment,” July 31, 2012, <http://www.state.gov/j/ct/rls/crt/2011/index.htm>.

organized crime networks.³⁷⁸ Pointing out that terrorist organizations and organized crime had already cooperated in the narcotics trafficking, a number of analysts warned that organized crime might decide to channel WMD material to terrorists.³⁷⁹ In Congressional testimony, one terrorism expert testified that organized crime had “entered a new phase of complicity” with terrorist networks:

Terrorist and criminal organizations rely on the same global transportation, communication, and financial infrastructures for illegal ploys. They take advantage of the same breakdowns in authority and enforcement in states under siege. They both seek increasing shares of the fortunes generated from narco-trafficking and other crimes.³⁸⁰

Many reasons exist to fear such a connection including the financial means available to organized crime syndicates and well-established trafficking channels,³⁸¹ and in some cases, connections to corrupt governments.³⁸² Countries with a weak rule of law pose the greatest opportunities for organized crime networks to exploit.³⁸³ They have demonstrated capabilities to move almost any illegal product across multiple international borders undetected—it is not a stretch to conceive that these criminal organization would choose to apply the same networks through which they traffic narcotic and small arms. (for example) to trafficking in WMD if financial motivation is possible.

³⁷⁸ See for example, Kimbereley Thachuk, *Transnational Threats: Smuggling and Trafficking in Arms, Drugs and Human Life* (Westport, CT and London: Praeger Security International, May 2007); Glenn Curtis and Tara Karacan, *The Nexus Among Terrorism, Narcotics Trafficking, Weapons Proliferation and Organized Crime Networks in Western Europe* (Washington, DC: Library of Congress, December 2002); Louise Shelley, John T. Picarelli, and Allison Irby et al., *Methods and Motives: Exploring Links between Transnational Organized Crime and International Terrorism*, National Institute of Justice Report, Document # 211207, September 2005.

³⁷⁹ Sonia Ben Ouaghrham-Gormley, “An Unrealized Nexus? WMD-related Trafficking, Terrorism, and Organized Crime in the Former Soviet Union,” *Arms Control Today* July/August 2007.

³⁸⁰ Lyudmila Zaitseva, “Organized Crime, Terrorism and Nuclear Trafficking,” *Strategic Insights* VI, no. 5 (August 2007). Citing September 22, 2005 Congressional Testimony by Glenn E. Schweitzer, on “Detecting and Preventing Nuclear Smuggling.”

³⁸¹ Ibid.

³⁸² Los Angeles Times, “Mexican General Makes Explosive Accusations,” April 23, 2008; U.S. Library of Congress, Congressional Research Service, *Mexico’s Drug Cartels*, by Colleen W. Cook, CRS Order Code RL34215 (Washington, DC: Office of Congressional Information and Publishing, October 16, 2007); Edward Vulliamy, *America: War Along the Borderline* (New York: Farrar, Straus and Giroux, 2010).

³⁸³ White House, *Strategy to Combat Transnational Organized Crime: Addressing Converging Threats to National Security*, July 2011.

Much of the concern about a possible nexus between WMD trafficking, organized crime, and terrorism originally focused on the former Soviet Union in the 1990s. At the time, a large number of insufficiently secured nuclear, chemical, and biological facilities were located in close proximity to trafficking routes for drugs and small arms. Powerful radiation sources also are plentiful and inadequately protected.³⁸⁴ However, while a handful of significant cases existed, the full potential convergence between WMD-related material trafficking and terrorism was largely unrealized. However, one analysis over the 2001–2006 period yielded other notable features.³⁸⁵ First, was the appearance of trafficking in chemical and biological material. Second, was that trafficking routes appear to have become more varied during the post-2001 period. Third, was that a few cases involved nuclear or radioactive material in combination with small arms (four cases) and narcotics (two cases), which may indicate a convergence between arms or drugs and WMD-related material. Fourth, in some of these cases, the nuclear or radioactive material was discovered by chance during an unrelated drug or financial investigation (which may indicate that the drug control and financial fraud enforcement agencies can also be useful instruments of proliferation prevention). Fifth, the data also includes a small number of cases involving opportunists who show a higher degree of organization. Several incidents involve groups of individuals who do not belong to an established organized crime group but collaborate for a specific operation, sometimes with the active participation of former law enforcement representatives. Finally, in addition, one out of four cases involves potent radioactive sources, particularly cesium-137 (37 cases) and strontium-90 (six cases), which could be used for RDDs.³⁸⁶

In 2011, the White House released its strategy to combat transnational organized crime,³⁸⁷ which notes, “transnational criminal organizations have taken advantage of our

³⁸⁴ William C. Potter and Elena Sokova “Illicit Nuclear Trafficking in the NIS: What’s New? What’s True?” *The Nonproliferation Review*, Summer 2002, 112–120.

³⁸⁵ Sonia Ben Ouagrham-Gormley, “An Unrealized Nexus? WMD-related Trafficking, Terrorism, and Organized Crime in the Former Soviet Union,” *Arms Control Today*, July/August 2007.

³⁸⁶ More details on report findings can be viewed in Ouagrham-Gormley “An Unrealized Nexus.”

³⁸⁷ White House, *Strategy to Combat Transnational Organized Crime: Addressing Converging Threats to National Security*.

increasingly interconnected world to expand their illicit enterprises.”³⁸⁸ Despite a long standing and successful history of dismantling criminal organizations, “not all of our capabilities have kept pace with the expansion of 21st century transnational criminal threats.”³⁸⁹ Therefore, this strategy is organized around “a single, unifying principle: to build, balance, and integrate the tools of American power to combat transnational organized crime and related threats to our national security—and to urge our partners to do the same.”³⁹⁰

Although it does not call out WMD trafficking specifically as a threat linked to transnational organized crime, it does recognize the broad spectrum of threats, advantages, and opportunities created by its nature. Further, it recognizes that transnational criminal networks, such as organized crime groups, drug traffickers, and weapons dealers, at times share convergence points—places, businesses, or people—to “launder” or convert their illicit profits into legitimate funds.³⁹¹

“In a world full of transnational threats, transnational crime is in an ascendant phase... This lethal nexus of organized crime, narco-trafficking, and terrorism is a threat that the United States.....Today, right now, we have an opportunity for cooperation not just between the United States and Russia, but among all nations represented here today. It’s up to us to seize the moment...”³⁹²

H. STATES OF CONCERN—COUNTRY PROFILES

Although the primary concern for proliferation transformed from state sponsored terrorism to that of a non-state group or independent terrorist group, the challenges that rogue nations, nations with a history of supporting terrorists or those with weak or collapsing governments, certainly fuel many of the opportunities for these groups to

³⁸⁸ White House, “Strategy to Combat Transnational Organized Crime, Letter from the President,” National Security Council, forward by President Barak Obama, July 19, 2011, <http://www.whitehouse.gov/administration/eop/nsc/transnational-crime/letter>.

³⁸⁹ Ibid.

³⁹⁰ Ibid., 1.

³⁹¹ Ibid., 8.

³⁹² Ibid., 4.

exploit. The potential linkage between terrorism and WMD proliferation is more apparent when examined in the context of known nations' governance and history with criminal/terrorist activities. According to the State Department, "Although terrorist organizations will continue to seek a [WMD] capability independent of state programs, the sophisticated [WMD] knowledge and resources of a state could enable a terrorist capability."³⁹³

The challenges in acquiring nuclear materials also highlights the importance of the nature of terrorists' relationships with states. One researcher succinctly summarizes these dynamics:

States can cooperate actively, as al Qaeda did with the Taliban and Hezbollah does with Iran. States can take a mixed approach toward terrorist activity often balancing leadership opposition to terrorist groups with popular support for them. Some failed or weak states such as (at times) Somalia or the Sudan are incapable of controlling terrorists within their borders. Each situation provides a terrorist group with a stronger platform from which to launch a nuclear attack.³⁹⁴

In fact, the U.S. Department of State currently designates two of the primary countries of proliferation concern, Iran and Syria, as state sponsors of terrorism.³⁹⁵ Taliban-ruled Afghanistan would have made the list before 9/11, but was omitted for the simple reason that Washington never diplomatically recognized the Kabul regime.³⁹⁶ Iraq, Libya, and North Korea have also shared the same designation in the not so distant past.³⁹⁷

³⁹³ U.S. Department of State, Country Reports on Terrorism, 2010.

³⁹⁴ Levi, *On Nuclear Terrorism*, 34.

³⁹⁵ U.S. Department of State, "State Sponsors of Terrorism," (n.d.), <http://www.state.gov>.

³⁹⁶ For a detailed discussion of state-sponsored or state-enabled terrorism, see Paul Pillar, *Terrorism and U.S. Foreign Policy* (Washington, DC: Brookings Institution Press, 2001), ch. 6.

³⁹⁷ Litwak, *Assessing the Nexus of Proliferation and Terrorism*, 1.

Equally, or more troubling, given the current threat, is the one which designates nations that may provide “safe havens”³⁹⁸ from which terrorists are able to operate. Iraq, Pakistan, and Afghanistan are designated as terrorist safe havens.

Only nine countries have nuclear weapons³⁹⁹ (some not part of NPT) but out of the nine that do, only two, Pakistan and North Korea, do analysts debate over what they might do with those arsenals or that they are secure.⁴⁰⁰ The BWC and CWC have high levels of compliance but more nations may be operating covert programs that often receive less attention and are harder to detect because much of the same technology is used in the private sector and labs.

A large community of scholars holds that no state would transfer materials to terrorist groups.⁴⁰¹ They argue that a state will be deterred by even a remote possibility of retaliation; this contention responds to the claim that a state might transfer weapons or materials in the pursuit of strategic aims. They also argue that problem states are normally dictatorships whose leaders do not want to relinquish control to terrorists, or moreover, those just below the top leadership would not have the authority to transfer materials or weapons. Finally, since nukes are expensive and difficult to acquire, a state that had successfully acquired them would not want to part with them.⁴⁰²

Many researchers contend that no state would transfer materials to a terrorist group citing three key reasons, (1) a state will be deterred by even the prospect of retaliation, (2) most likely to occur under dictatorships whose leaders are highly unlikely

³⁹⁸ The Department of State uses the term “terrorist safe havens” to describe ungoverned, under-governed, or ill-governed physical areas where terrorists are able to organize, plan, raise funds, communicate, recruit, train, transit, and operate in relative security because of inadequate governance capacity, political will, or both.

³⁹⁹ The United States, Britain, France, Russia, China, India, and Israel all possess nuclear weapons.

⁴⁰⁰ Levi, *On Nuclear Terrorism*, 15.

⁴⁰¹ *Ibid.*, 23.

⁴⁰² Bunn used here but others apply. Matthew Bunn et al., *Securing Nuclear Warheads and Materials: Seven Steps for Immediate Action* (Cambridge, MA: Belfer Center for Science and International Affairs, Kennedy School, Harvard University, 2002).

to relinquish control, and (3) top leadership would lack the authority to transfer materials.⁴⁰³

Although this paper does not argue that these nations would officially use nuclear force or unconventional (WMD) force against the United States, they do each possess a unique set of political, social and economic circumstances that create security concerns and potential opportunities for would be terrorist organizations to exploit. To understand the top proliferation concerns better in relation to nation-states, a brief overview of each country's potential linkage and key issues is included in this paper.

1. Pakistan

Over the last decade, Pakistan has made huge strides in growing their nuclear program. While Pakistan is currently considered a U.S. ally, no doubt exists that they have significant sympathies with the rest of the Middle East (and largely Muslim) world. Moreover, given the tense history of Pakistani-Indian relations, including a series of wars over Kashmir, India and Pakistan's buildup of nuclear weapons is exacerbating the prospect of a dangerous nuclear arms race in South Asia that could lead to a nuclear conflict.⁴⁰⁴

Pakistan has been a passive sponsor of terrorism, but also has a deficit of governmental capacity to control the Afghan border region fully, which allowed the Haqqani Network, the Quetta Shura, and Lashkar-e-Tayyiba to exploit the country to plan and direct operations.⁴⁰⁵

⁴⁰³ Levi, *On Nuclear Terrorism*, 23.

⁴⁰⁴ Prepared Statement of Senator Bob Graham, Chairman, and Senator Jim Talent, Vice-Chairman, of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, Senate Homeland Security and Governmental Affairs Committee, December 11, 2008.

⁴⁰⁵ U.S. Department of State, Office of the Coordinator for Counterterrorism, Country Reports on Terrorism, "Chapter 2: Reports on East Asia and Pacific Overview," July 31, 2012, <http://www.state.gov/j/ct/rls/crt/2011/195542.htm>.

Sites with unknown security controls are ripe with government and military personnel who are sympathizers of the radical Islamic factions.⁴⁰⁶ The possibility of radical Islamists seizing control of Pakistan's government, and therefore its nuclear arsenal, is also of serious concern.⁴⁰⁷

The potential for WMD trafficking and proliferation remained a concern in Pakistan due to the porous borders and the challenging security situation and lack of knowledge regarding export licensing practices.⁴⁰⁸ Pakistan also constitutes a threat because it serves as a possible point of diversion. Pakistan has a small, heavily guarded nuclear stockpile. Substantial security improvements have been made in recent years, in part with U.S. help, but the specifics of this cooperation are classified. Immense threats remain in Pakistan from nuclear insiders with extremist sympathies, al Qaeda, or Taliban outsider attacks, and a weak state.⁴⁰⁹ The Umma-Tameer-e-Nau (UTN), founded by Pakistani nuclear scientists with close ties to Al Qaeda and the Taliban, was headed by Sultan Bahiruddin Mahmood, who had been in charge of Pakistan's Khushabreactor.⁴¹⁰

Of course, Pakistan was the home of nuclear scientist A.Q. Kahn, who operated out of Pakistan. Kahn is responsible for the development of Pakistan's uranium enrichment program and confessed to running a proliferation network and to funneling sensitive nuclear technologies to Iran, Libya, and North Korea while in Pakistan.⁴¹¹ The Pakistani government was fairly uncooperative with the investigation which originally refused to arrest Kahn and has refused to let anyone other than Pakistani government

⁴⁰⁶ Jenkins, *Will Terrorists Go Nuclear?*.

⁴⁰⁷ *The A.Q. Kahn Network: Case Closed?*, Hearing Before the Subcommittee on International Terrorism and Nonproliferation of the Committee on International Relations House of Representatives, May 25, 2006, 1.

⁴⁰⁸ U.S. Department of State, Office of the Coordinator for Counterterrorism, Country Reports on Terrorism, "Chapter 2: Reports on East Asia and Pacific Overview."

⁴⁰⁹ Bunn, "Securing the Bomb 2010," vii.

⁴¹⁰ Rolf Mowatt-Larssen, "Nuclear Security in Pakistan: Reducing the Risk of Nuclear Terrorism," *Arms Control Today*, July/August 2009.

⁴¹¹ Carnegie Endowment for International Peace, "A.Q. Kahn Nuclear Chronology," Issue Brief, III, no. 8 (September 7, 2005): 1; David Albright and Corey Hinderstein, "Unraveling the A.Q. Kahn and Future Proliferation Networks," *The Washington Quarterly*, Spring 2005, 111.

officials interview Kahn.⁴¹² Kahn was sentenced to house arrest in 2004 but was declared a “free man” by a Pakistani court in February 2009.⁴¹³

Pakistan poses a major threat because of its terrorist networks, history of instability, and nuclear arsenal of several dozen warheads. Senator Graham and others assert that if terrorism and WMD were mapped today, “all roads would intersect in Pakistan.”⁴¹⁴

2. North Korea

Attention has focused on North Korea ever since their covert nuclear weapons program was discovered in 1994. In 2002, a CIA report stated that evidence had been found indicating that they had begun constructing a centrifuge facility and embarked on an effort to develop a uranium enrichment program.⁴¹⁵ In 2006, a team of visiting researchers noted, “We know very little about the DPRK nuclear stockpile and the nation’s nuclear strategy. DPRK officials stated the role of their nuclear weapons is to deter the United States and defend the sovereignty of their state.”⁴¹⁶ What is known is that North Korea already has enough plutonium for several nuclear weapons, has conducted two nuclear tests, has pulled out of the NPT, and ejected international weapons inspectors.⁴¹⁷ Concern has grown in tandem with the country’s deteriorating internal condition and rising tensions in South East Asia.

⁴¹² Albright and Hinderstein, “Unraveling the A.Q. Jahn and Future Proliferation Networks,” 116–117.

⁴¹³ Salmon Masood and Waqar Gillani, “Limits Eased on Pakistani Scientist,” *New York Times*, March 29, 2010.

⁴¹⁴ *Statement of Senator Bob Graham, Chairman, Senator Jim Talent, Vice-Chairman, Congressman Tim Roemer, and Robin Cleveland of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, Testimony Before a Hearing of the Senate Homeland Security and Governmental Affairs Committee*, December 11, 2008.

⁴¹⁵ Untitled CIA estimate provided to Congress on November 19, 2002.

⁴¹⁶ Siegfried S. Hecker, *Report on North Korean Nuclear Program*, Center for International Security and Cooperation Stanford University, November 15, 2006. On October 31 to November 4, 2006, a delegation led by Prof. John W. Lewis, Stanford University, accompanied by Siegfried S. Hecker and Robert L. Carlin of Stanford University, and Charles L. (Jack) Pritchard of the Korean Economic Institute visited Pyongyang, Democratic People’s Republic of Korea (DPRK).

⁴¹⁷ Bunn, “Securing the Bomb 2010,” 102.

While the North Korean nuclear program may lead to rising nuclear tensions regarding power and security within the region, the risk of terrorism arising from that country's program remains fairly low. In North Korea, a very small nuclear stockpile and a military state probably limit the risks of nuclear theft.⁴¹⁸ What may be a greater threat is the risk of a failing state. The very real possibility of the collapse of the state could destroy whatever controls are in place and create a serious problem of loose nukes.⁴¹⁹ However, while it was once widely feared that a coup d'état during a leadership change could threaten the security of their weapons program, that threat failed to materialize after the death of Kim Jong-Il. In fact, in recent a recent interview, South Korean nuclear officials stated that they were "optimistic" that the new leader may be willing to restart negotiations to end its nuclear program⁴²⁰ after they broke down in 2008.⁴²¹

North Korea's latent nuclear weapons program is rightfully the main point of concern for its neighbors and the international community but far less publicized is Pyongyang's ongoing efforts to build upon its capabilities to produce and maintain chemical and biological weapons (CBW). Unclassified estimates of the chemical weapons (CW) arsenal are imprecise. The consensus seems to be that even though the North Korean stockpile does not appear to be increasing, it already possesses a substantial chemical arsenal sufficient to inflict massive civilian casualties on South Korea.⁴²²

North Korea acceded to the Biological Weapons Convention in 1987, and the Geneva Protocol in 1989, but has not signed the Chemical Weapons Convention. While the international community has some diplomatic measures to deal with its nuclear

⁴¹⁸ Bunn, "Securing the Bomb 2010," 102.

⁴¹⁹ Ashton B. Carter, William J. Perry and John M. Shalikashvili, "A Scary Thought: Loose Nukes in North Korea," *Wall Street Journal*, February 6, 2003, <http://belfercenter.ksg.harvard.edu/publication/1243/>.

⁴²⁰ Peter Hirschberg and Sangwon Yoon, "S. Korea Optimistic Aid Will Bring North Back to Talks" *Bloomberg News Wire*, February 2, 2012.

⁴²¹ Ibid.

⁴²² International Crisis Group, Asia, "North Korea's Chemical and Biological Weapons Program," Asia Report no. 167, June 18, 2009.

program, no direct mechanism is available for dealing with its chemical weapons and possible biological weapons.

3. Iran

At the time of this writing, Iran stands as the most prominent potential threat to the international community in terms of escalating its nuclear proliferation program. While Western officials have long asserted that Tehran is planning to build nuclear weapons, Iran's leadership has insisted that its goal in developing a nuclear program is to for energy and medical purposes.⁴²³ However, the 2007 NIE found that Iran had been engaged in developing a nuclear weapons program. This program is believed to have included the full range of weapons development, from acquiring the raw nuclear material to working on a weapon with a delivery system.⁴²⁴

In November 2011, the IAEA released its report on nuclear verification in Iran detailing a "credible" case that "Iran has carried out activities relevant to the development of a nuclear device" and that the project may still be under way."⁴²⁵ The 2011 IAEA report was consistent with the findings in the 2007 NIE regarding a comprehensive weapons program in Iran prior to 2003⁴²⁶ and warned that Iran appears to be on a structured path to building a nuclear weapon.⁴²⁷ The report cited that the IAEA had amassed "thousands of documents, showing "research, development and testing activities" on a range of technologies that would only be useful in designing a nuclear

⁴²³ New York Times, "NY Times Overview Iran's Nuclear Program."

⁴²⁴ Office of the Director of National Intelligence, *Iran: Nuclear Intention and Capabilities, National Intelligence Estimate*, November 2007.

⁴²⁵ IAEA report. Implementation of the NPT Safeguards Agreement and Relevant Provision of Security Council Resolutions in the Republic of Iran Report by the Director General November 8 2011 GOV.2011/65 (Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran, was issued by the IAEA Director General). Important to note that the IAEA does not conclude that it currently has an active program to build nuclear weapons

⁴²⁶ Peter Crail, Daryl Kimball, and Greg Thielmann, "The IAEA's Iran Report: Assessment and Implications," *Arms Control Today*, 2, no. 15, November 8, 2011, http://www.armscontrol.org/issuebriefs/The-IAEAs-Iran-Report_Assessment-and-Implications.

⁴²⁷ *Implementation of the NPT Safeguards Agreement and Relevant Provisions of Security Council Resolutions in the Islamic Republic of Iran*, GOV/2011/65, Report by the Director General, November 8, 2011.

weapon.⁴²⁸ Previous IAEA assessments were very cautious on that claim and mainly pointed out that many uncertainties still existed concerning Iran's real intentions. The activities documented in the IAEA report, including research related to nuclear warheads, underscore Iran's claims that it is only seeking the peaceful use of nuclear energy are false.⁴²⁹

Iran has continually defied the United Nations resolutions to stop enrichment practices. Iran's warhead work also contradicts its obligation not to pursue nuclear weapons under the nuclear Nonproliferation Treaty (NPT), under which state parties commit "not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices."⁴³⁰ The IAEA report reinforces what the non-proliferation community has alleged for some time: that Iran engaged in various nuclear weapons development activities until 2003, then stopped many of them, but continues others.⁴³¹ The report suggests that Iran is working to shorten the timeframe to build the bomb once and if it makes that decision.⁴³²

International concerns with Iran's intentions continue to grow. The IAEA's 2013 report assessed that Iran had made progress across the board in its nuclear program, enriching more uranium and installing hundreds of next-generation centrifuges that could speed enrichment.⁴³³

⁴²⁸ David Sanger and William Broad, "U.N. Agency Says Iran Data Points to A-Bomb," *New York Times*, November 8, 2011.

⁴²⁹ New York Times, "Iran's Nuclear Program" (Nuclear Talks, 2012), May 12, 2012.

⁴³⁰ Treaty on the Non-Proliferation of Nuclear Weapons, 1968 Treaty on the Non-proliferation of Nuclear Weapons.

⁴³¹ Peter Crail, "IAEA Lays Out Iran Weapons Suspicions," December 2011. See also *Arms Control Today*, Elise Labott, CNN Senior State Department Producer of CNN.com IAEA report to detail efforts by Iran to develop a nuclear weapon from November 6, 2011.

⁴³² *Arms Control Today*, "The IAEA's Iran Report: Assessment and Implications," 2, no. 15 (November 8, 2011). While Iran does not yet possess a nuclear device, it is building the capabilities to do so.

⁴³³ *Implementation of the NPT Safeguards Agreement and relevant provisions of Security Council resolutions in the Islamic Republic of Iran*, GOV/2013/27, Report by the Director General, May 22, 2013.

Iran's nuclear aspirations are certainly increasing tensions in the international community, and specifically, within the region. Concern is increasing among American officials that Israel may soon strike at Iran's nuclear facilities.⁴³⁴

However, should Iran's actions to enrich uranium and to develop a nuclear weapons program be seen as an increased risk for WMD terrorism?—Not necessarily. Although Iran is actively pursuing an enrichment program, its stockpile and facilities are well guarded and the state is unlikely to fall into instability. Also, it is unlikely at the present moment that Iran has enough enriched uranium to transfer to anyone else for use, or that what it does have is enriched to a high enough level to be weapons grade. (HEU with enrichment levels as low as 20% and be used (at least in theory) in improvised weapons; although, most reactors use uranium enriched to up to 80%).⁴³⁵ However, if Iran does continue to produce HEU, that may create more and regional fears and may encourage other nations to follow suit to develop programs of their own;⁴³⁶ thereby, increasing the number of opportunities terrorists may exploit.

The Iranian situation does highlight the long standing friction between the obligations of NPT Articles II and III (under which the NWS agree not to help NNWS develop or acquire nuclear weapons, and the NNWS permanently forswear the pursuit of such weapons) and Article IV of the NPT (Article IV acknowledges the “inalienable right” of NNWS to research, develop, and use nuclear energy for non-weapons purposes). It also supports the “fullest possible exchange” of such nuclear-related information and technology between NWS and NNW if legitimate peaceful energy programs are to be pursued.^{437,438}

Iran has been designated as a state sponsor of terrorism since 1984. Iran's financial, material, and logistic support for terrorist and militant groups are well known.

⁴³⁴ The Washington Post reported that Defense Secretary Leon E. Panetta believed there was a “strong likelihood” that Israel would strike Iran in April, May or June.

⁴³⁵ Levi, “On Nuclear Terrorism,” 2007, 66–67.

⁴³⁶ Bunn, “Securing the Bomb 2010,” 21.

⁴³⁷ Nuclear Nonproliferation Treaty.

⁴³⁸ This view is expoused by Michael May in his writings.

Despite its pledge to support the stabilization of Iraq, in 2011, Iran continued to provide lethal support—including weapons, training, funding, and guidance—to Iraqi Shia militant groups that targeted U.S. and Iraqi forces.

Iran provided weapons, training, and funding to both Hamas and Hezbollah, Hamas and other Palestinian terrorist groups, including the Palestine Islamic Jihad (PIJ) and the Popular Front for the Liberation of Palestine-General Command. Since the end of the 2006 Israeli-Hezbollah conflict, Iran has assisted Hezbollah in rearming, in direct violation of UN Security Council Resolution 1701.⁴³⁹ Iran has provided hundreds of millions of dollars in support of Hezbollah in Lebanon and has trained thousands of Hezbollah fighters at camps in Iran.⁴⁴⁰ Iran has also provided training to the Taliban in Afghanistan on small unit tactics, small arms, explosives, and indirect fire weapons. The group's robust relationships with the regimes in Iran and Syria, involvement in illicit financial activity, continued engagement in international attack planning, and acquisition of increasingly sophisticated missiles and rockets, continued to threaten U.S. interests in the region.⁴⁴¹ Meanwhile, Hamas retained its grip on Gaza, where it continued to stockpile weapons that pose a serious threat to regional stability. Moreover, Hamas and other Gaza-based groups continue to smuggle weapon materiel, and people through the Sinai, and thus, take advantage of the vast and largely ungoverned territory.⁴⁴²

In 2010, Iran remained unwilling to bring to justice senior al-Qa'ida (AQ) members it continued to detain, and refused to identify those senior members publicly in its custody. Iran has repeatedly resisted numerous calls to transfer custody of its AQ detainees to their countries of origin or third countries for trial.⁴⁴³

⁴³⁹ *United Resolution 1701*, August 2006.

⁴⁴⁰ Department of State, Office of the Coordinator for Counterterrorism, "Country Reports on Terrorism 2011, Chapter 3: State Sponsors of Terrorism," August 18, 2011, <http://www.state.gov/j/ct/rls/crt/2011/195547.htm>.

⁴⁴¹ *Ibid.*

⁴⁴² *Ibid.*

⁴⁴³ *Ibid.*

4. Russia and the Former Soviet Republics

While the nuclear tension between the United States and the Soviet Union conflict that drove the nuclear arms race in both superpower nations has ended, the collapse of the Soviet Union brought new concerns regarding the security of those stockpiles. From the perspective of potential terrorism, the dissolution of the Soviet Union in December 1991 was much more problematic. After this time, many analysts grew concerned that nuclear weapons might be lost or stolen, or fall into the wrong hands.

When the Soviet Union collapsed in late 1991, it reportedly possessed more than 27,000 nuclear weapons, and these weapons were deployed on the territories of several of the former Soviet republics.⁴⁴⁴ All the nuclear warheads have now been moved to Russia, but Russia still has around 6,000 strategic nuclear weapons and perhaps as many as 12,000 warheads for non-strategic nuclear weapons.⁴⁴⁵

Several of the former soviet republics (FSU) states possessed tens of thousands of nuclear weapons, massive quantities of weapons-usable nuclear material, huge stocks of chemical munitions and biological agents, and a staggering quantity of delivery vehicles for WMD. According to Sam Nunn, one architect of the measure, three of the FSU countries—Ukraine, Belarus and Kazakhstan—had more nuclear weapons on their territory than China, Great Britain, and France combined.⁴⁴⁶

To assist the former Soviet Republics, and reduce the threat these weapons pose to the United States and the proliferation risks from nuclear weapons and materials in the former Soviet Union, Congress established the Nunn-Lugar Cooperative Threat Reduction Program (CTR) in 1991. However, due to significant commitment work by Russia's own efforts, and other international cooperative efforts, significant progress in Russia's nuclear security has occurred. The Nunn-Lugar Cooperative Threat Reduction aimed at reducing the threat of these weapons was an international effort, headed by the

⁴⁴⁴ U.S. Library of Congress, Congressional Research Service, *Nunn-Lugar Cooperative Threat Reduction Programs: Issues for Congress*.

⁴⁴⁵ Ibid.

⁴⁴⁶ Comments made by Sam Nunn. Lugar and Nunn, "Nunn-Lugar at 20: Assessing America's Progress on Risk Reduction and Terrorism Prevention."

United States, to assist with the former Soviet republics with the safe and secure transportation, storage, and elimination of nuclear weapons and secure stockpiles.⁴⁴⁷ This nuclear security initiative (known as The Bratislava Initiatives) completed in 2005, did much to secure nuclear security. Some estimate the over risk of nuclear threat to be a fraction of what it was a decade ago.⁴⁴⁸ While often considered a unique program with a limited scope, Nunn-Lugar has matured into a “complex and comprehensive” foreign policy and national security mechanism.⁴⁴⁹

Many of these weapons were located outside Russia, but have since been returned to storage areas in Russia. The former Soviet republics of Ukraine, Belarus, and Kazakhstan—where the Soviets based many of their nuclear warheads—safely returned their Soviet nuclear weapons to post-communist Russia in the 1990s, but all three countries still have stockpiles of weapons-grade uranium and plutonium.⁴⁵⁰ Such was the status of Russian Nuclear security shortly after 9/11. While often considered a unique program with a limited scope, Nunn-Lugar has matured into a complex and comprehensive foreign policy and national security mechanism.⁴⁵¹

However, significant weaknesses remain in some areas. A major need still exists for consolidation, as Russia still has the world’s largest numbers of nuclear weapons sites and weapons-usable nuclear materials buildings, including the world’s largest fleet of HEU-fueled research reactors and its security measure face substantial threats from both insiders and outsiders.⁴⁵² Russia is the only country in the world where senior officials have confirmed that terrorist teams have carried out reconnaissance at nuclear weapon

⁴⁴⁷ U.S. Library of Congress, Congressional Research Service, *Nunn-Lugar Cooperative Threat Reduction Programs: Issues for Congress*, 5.

⁴⁴⁸ Bunn, “Securing the Bomb 2010,” 32. Also see Matthew Bunn, *The Threat in Russia and the Newly Independent States*, in *Nuclear Threat Initiative Research Library* (Cambridge, MA and Washington, DC: Project on Managing the Atom, Harvard University, and Nuclear Threat Initiative, 2006).

⁴⁴⁹ Charles Thorton, “The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction,” *Nonproliferation Review* (Fall/Winter 2003): 135.

⁴⁵⁰ Russia in the 1990s, but all three countries still have stockpiles of weapons-grade uranium and plutonium. Council of Foreign Relations, “Loose Nukes,” *Backgrounder* January 2008, <http://www.cfr.org/weapons-of-terrorism/loose-nukes/p9549>.

⁴⁵¹ Thorton, “The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction,” 135.

⁴⁵² Bunn, “Securing the Bomb 2010,” 31.

storage sites.⁴⁵³ In 2005, another Russian minister in charge of guarding nuclear facilities confirmed they had information that “international terrorists have planned attacks against nuclear and power industry installations” intended to “seize nuclear materials and use them to build WMD for their own political use.”

5. Libya

Libya is reported to have spent between \$40 million and \$100 million over an approximate five-year period purchasing nuclear weapons assistance from Pakistan.⁴⁵⁴ In October 2003, the seizure of uranium-enriched gas-centrifuge components bound for Libya demonstrated just how far the Khan network was able to traffic in nuclear components.⁴⁵⁵ Although Libya subsequently renounced nuclear weapons and gained compliance with the NPT, it became apparent what countries were able to access components should they have the desire.

The Khan network provided material and expertise to produce fissile material. It also provided them with detailed nuclear weapons designs, component information, and weapons assembly instructions.⁴⁵⁶ In fact, a shipment of centrifuges to Libya were intercepted by U.S. authorities, who thereby, broke up the Khan network.

6. Afghanistan

The international community continues to work in concert with the International Security Assistance Force. The government of Afghanistan, in concert with the international community, continued its efforts to eliminate terrorist safe havens and build security, particularly in the country’s south and east where insurgents threatened stability. The Taliban, the Haqqani Network, Hezb-e-Islami Gulbuddin, al-Qa’ida (AQ), Lashkar-

⁴⁵³ Bunn, “Securing the Bomb 2010,” 35. Two incidences during 2001 were confirmed by Major General Valynkin, who served as the commander of the force that guards Russian nuclear warheads. The Russian state newspaper reported more such incidents focused on nuclear warhead transport trains. See Associated Press, “Russia: Terror Groups Scoped Nuke Site,” October 25, 2001.

⁴⁵⁴ Sunday Times, London, January 4, 2004, Cited in Global Security Newswire, “Libya’s Purchased Nuclear Weapons Plans from Pakistan, Qadhafi’s Son Says,” January 5, 2004.

⁴⁵⁵ David Albright and Corey Hinderson, “Unraveling the A.Q. Kahn and Future Proliferation Networks,” *The Washington Quarterly*, 2005, 111.

⁴⁵⁶ *Ibid.*, 114.

e-Tayyiba, and other groups continued to use territory across the border in Pakistan as a base from which to plot and launch attacks within the region and beyond.⁴⁵⁷ AQ leadership in Pakistan maintained its support to militants conducting attacks in Afghanistan and provided funding, training, and personnel to facilitate terrorist and insurgent operations.

The government of Afghanistan holds no known sources of WMD, but the potential for WMD trafficking and proliferation was a concern in Afghanistan because of its porous borders and the presence of terrorist groups.

7. Syria

The best open source report indicate that Syria has a robust, decades-old chemical weapons program that has produced a variety of both mustard and nerve agents for use on multiple weapons systems ranging from missiles, rockets, artillery, and aerial bombs. A great deal of unconfirmed reporting also states that Syria may also have a biological weapons program. It is known that Syria also possesses North Korean long range delivery missiles, which makes Syria a forbidding regional threat, especially if the regime becomes seriously threatened and any WMD capability they may have susceptible to diversion of terrorist or other insurgent groups.

Syria is suspected of having one of the most advanced chemical warfare (CW) capabilities in the Middle East.⁴⁵⁸ Syria is one of seven non-signatories to the CWC but admitted in 2012 to possessing a stockpile of chemical weapons, which it claims are reserved for national defense against foreign countries.⁴⁵⁹

⁴⁵⁷ U.S. Department of State, Office of the Coordinator for Counterterrorism, Country Reports on Terrorism, "Chapter 2: Reports on East Asia and Pacific Overview."

⁴⁵⁸ Several western (non-governmental) organizations have stated they believe Syria has an active chemical weapons program including NTI, "Syria, Overview," Nuclear Threat Initiative," updated August 2011, <http://www.nti.org/country-profiles/Syria>; Syria Magnus Normark, Anders Lindblad, Anders Norqvist, Björn Sandström, Louise Waldenström Swedish Defense Research Agency report FOI-R--1290--SE, "Syria and WMD Incentives and Capabilities," June 2004, ISSN 1650-1942; Charles Blair, "Fearful of a Nuclear Iran? The Real WMD Nightmare is Syria." *Bulletin of the Atomic Scientists*, March 1, 2012.

⁴⁵⁹ Associated Press, "Syria Says It Will Use Chemical Weapons If Attacked," *USA Today*, July 23, 2012, <http://www.usatoday.com/news/world/story/2012-07-23/Syria-violence-rebels/56425402/1>.

Less is known about Syria's suspected biological weapons program. Very limited open source information is available regarding Syria's biological warfare (BW) capabilities but it is suspected that Syria is also associated with an active biological weapons research and production program. German and Israeli sources have asserted that Syria possesses *Bacillus anthracis* (which causes anthrax), botulinum toxin, and ricin. American sources have characterized Syria's anthrax and botulism production capability as "probable."⁴⁶⁰ According to one NATO consultant, Syria has worked on anthrax, plague, tularemia, botulinum, smallpox, aflatoxin, cholera, ricin and camelpox, and has used Russian help in installing anthrax in missile warheads.⁴⁶¹ The consultant also stated "they view their bio-chemical arsenal as part of a normal weapons program."⁴⁶²

Assessments of Syria's possible nuclear weapons program have caused disagreements pertaining to either CWC or BWC programs. Syria is a signatory to the Nuclear Non-Proliferation Treaty, and has repeatedly attempted to purchase small research type nuclear reactors from China, Russia, Argentina, or other countries.⁴⁶³ Syria has allegedly received direct assistance from Russia (and formerly the Soviet Union), China, Iran, and North Korea in developing its WMD and ballistic missile programs.⁴⁶⁴ Western agencies alleged that they had proof of a Syrian covert weapons program. In September 2007, the *Washington Post* reported, "..... a former Israeli official said he had been told that it was an attack against a facility capable of making unconventional weapons."⁴⁶⁵ The report went on to claim that Israel had recently provided the United States with evidence—code named "Orchard"—that North Korea had been cooperating

⁴⁶⁰ Blair, "Fearful of a Nuclear Iran? The Real WMD Nightmare is Syria."

⁴⁶¹ Jerry Jordan, "Syria's Bio-Warfare Threat: An Interview with Dr. Jill Dekker," *New English Review*, December 2007, http://www.newenglishreview.org/custpage.cfm/frm/13108/sec_id/13108.

⁴⁶² Ibid.

⁴⁶³ Globalsecurity.org, "Syria- Nuclear Weapons Programs," (n.d.), <http://www.globalsecurity.org/wmd/world/syria/nuke.htm>

⁴⁶⁴ NTI, "Syria, Overview," Nuclear Threat Initiative."

⁴⁶⁵ Glenn Kessler, "N. Korea, Syria May Be at Work on Nuclear Facility," *Washington Post*, September 13, 2007, A12.

with Syria on a nuclear facility.⁴⁶⁶ The evidence, said to come primarily from Israel, includes dramatic satellite imagery.⁴⁶⁷

Pakistani investigators reportedly found that Khan's middlemen offered help to Syria but never provided assistance in the end; an assertion still subject to scrutiny.⁴⁶⁸

Based upon these assessments, on September 6, 2007, Israel bombed a site in Syria that it believed had been a nuclear reactor under construction.⁴⁶⁹ Damascus faces unresolved allegations that it illicitly tried to build a plutonium production reactor at a site destroyed by Israel in 2007.

Reports about the intelligence leading to the bombing are conflicted. Initial Western press reports asserted that the Israeli air strike followed a shipment delivery to Syria by a North Korean freighter, and that North Korea was suspected of supplying a reactor to Syria for a nuclear weapons program. On October 24, 2007, the Institute for Science and International Security released a report that identified a site in eastern Syria's Deir ez-Zor Governorate province as the suspected reactor. The report speculated about similarities between the Syrian building and North Korea's Yongbyon Nuclear Scientific Research Center, but said it was too early to make a definitive comparison.⁴⁷⁰ On October 25, 2007, Western media said the main building and any debris from it following the air strike had been completely dismantled and removed by the Syrians.⁴⁷¹

After refusing to comment on the reports for six months, the Bush administration briefed Congress and the IAEA on April 24, 2008, saying that the U.S. government was

⁴⁶⁶ Kessler, "N. Korea, Syria May Be at Work on Nuclear Facility," A12.

⁴⁶⁷ David E. Sanger, "Bush Administration Releases Images to Bolster Its Claims About Syrian Reactor," *The New York Times*, April, 25, 2008.

⁴⁶⁸ Press Trust of India, "Khan Gave Nuke Tech to Three More Nations," January 2, 2005.

⁴⁶⁹ Israel claimed that the nuclear reactor was not yet operational and no nuclear material had been introduced into it. Top U.S. intelligence officials claimed low confidence that the site was meant for weapons development, noting that the site did not have a reprocessing faculty, but later comments by President Bush contradicted such an assessment.

⁴⁷⁰ David Albright and Paul Brannan, "Suspect Reactor Construction Site in Eastern Syria: The Site of the September 6, Israeli Raid? *Institute for Science and International Studies*, October 23, 2007, http://www.isis-online.org/publications/SuspectSite_24October2007.pdf.

⁴⁷¹ William J. Broad and Mark Mazzetti, "Photos Show Cleansing of Suspect Syrian Site," *New York Times*, October 26, 2007.

“convinced” that Syria had been building a “covert nuclear reactor” “not intended for peaceful purposes.”⁴⁷² The briefing included releases of satellite photographs of the bombed site and overhead and ground level intelligence photographs of the site under construction, including the alleged reactor vessel steel shell before concrete was poured and of the alleged reactor head structure.

On November 26, 2008, the IAEA Board of Governors approved technical aid for Syria despite Western allegations that the country had a secret atomic program that could eventually be used to make weapons. China, Russia, and developing nations criticized Western “political interference” that they said undermined the IAEA’s program to foster civilian atomic energy development.⁴⁷³ The top U.N. nuclear official also strongly rebuked Western powers for trying to deny the request, saying this should not be done without evidence and merely on the existence of an investigation.⁴⁷⁴

In recent months, the situation has created increasing concern within the United States and other Western states. President Obama and other policy makers have recently weighed in. In July 2012, two Senators issued a joint statement expressing their alarm over the movement of the chemical weapons and urged President Obama to “respond accordingly.”⁴⁷⁵ President Obama commented on the concern saying that if suspicions were true, that Assad is transferring chemical weapons from secure sites to the battlefield, it significantly raises the risks they may lose control over these weapons or that they may be compromised.⁴⁷⁶

⁴⁷² White House, “Statement by the Press Secretary,” Press release, April 24, 2008.

⁴⁷³ Global Security Newswire, “Diplomats Question Syrian Request for IAEA Aid, Nuclear Threat Initiative,” November 17, 2008, <http://www.nti.org/gsn/article/diplomats-question-syrian-request-for-iaea-aid/>.

⁴⁷⁴ NTI, “ElBaradei Lashes Critics of Syrian Nuclear Aid Request,” November 25, 2008, <http://www.nti.org/gsn/article/elbaradei-lashes-critics-of-syrian-nuclear-aid-request/>.

⁴⁷⁵ U.S. Senators John McCain (R-AZ), Joe Lieberman (I-CT) and Lindsey Graham (R-SC) released the following joint statement regarding the situation in Syria: July 15, 2012.

⁴⁷⁶ Mark Landler, “Obama Threatens Force Against Syria,” *New York Times*, August 20, 2012, <http://www.nytimes.com/2012/08/21/world/middleeast/obama-threatens-force-against-syria.html>.

We cannot have a situation in which chemical or biological weapons are falling into the hands of the wrong people. We have been very clear to the Assad regime but also to other players on the ground that a red line for us is, we start seeing a whole bunch of weapons moving around or being utilized.⁴⁷⁷

I. CONCLUSION

A complex set of factors shape a group's propensity to acquire and use nuclear weapons. Religious and political goals do provide a dangerous motivating component, but the greatest danger occurs when the group also has technical capabilities, easily exploitable opportunities, and justification for mass murder to further those goals. Technical and scientific hurdles have proved daunting but experts warn that the odds for a successful attack could rise significantly in the future as determined foes intersect with advancing technology and people willing to advance their cause by sharing technology and materials. Moreover, as with all criminal enterprise opportunities, in this case, access to materials and knowledge is the key factor.

CBRN materials and expertise remain a significant terrorist threat based on: terrorists' stated intent to acquire and use these materials; the nature of injury and damage these weapons can inflict; the ease with which information on these topics now flows, and the dual-use nature of many relevant technologies and precursors, which makes them difficult to control.⁴⁷⁸

While significant efforts have been directed toward securing CBRN material across the globe, the illicit trafficking of these materials persists, including instances involving highly enriched uranium.⁴⁷⁹ These examples suggest that caches of dangerous material may exist on the black market and that the international community must complement its efforts to consolidate CBRN materials and protect facilities with broader

⁴⁷⁷ Landler, "Obama Threatens Force Against Syria."

⁴⁷⁸ Department of State, Office of the Coordinator for Counterterrorism, Country Reports on Terrorism 2011, *Chapter 4: The Global Challenge of Chemical, Biological, Radiological, and Nuclear (CBRN) Terrorism*, July 31, 2012.

⁴⁷⁹ See NTI, "NIS Nuclear Trafficking Collection," February 1, 2013, <http://www.nti.org/db/nistraff/index.html>.

efforts to detect, investigate, and secure CBRN materials that have fallen outside of proper control.

Nuclear weapons and other WMD lie at the heart of what many fear to be the worst possible nexus of transnational crime and terrorism. As the Director of the National Intelligence testified:

Over the coming years, we will continue to face a substantial threat, including in the U.S. Homeland, from terrorists attempting to acquire biological, chemical, and possibly nuclear weapons and use them to conduct large-scale attacks. Conventional weapons and explosives will continue to be the most often used instruments of destruction in terrorist attacks; however, terrorists who are determined to develop CBRN capabilities will have increasing opportunities to do so, owing to the spread of relevant technological knowledge and the ability to work with CBRN materials and designs in safe havens.⁴⁸⁰

⁴⁸⁰ Denis Blair, *Statement for the Record, Intelligence Community Annual Threat Assessment (2009) Senate Select Committee on Intelligence*, March 2009, 21. (UNCLASSIFIED).

IV. CURRENT CHALLENGES IN PROLIFERATION AS RELATED TO WMD TERRORISM

A. THREAT CONVERGENCE

Concerns about WMD proliferation are not new and are as old as the nuclear era. As was demonstrated in the literature review, the core documents, which still serve as the cornerstone for policy, were drafted decades ago. However, changes in the last decade have created a dangerous new world and have changed the rules of the game. Concerns over a proliferation/terrorism nexus took on new meaning after 9/11. Troubling are attempts—both covert and overt—by countries to gain nuclear technology for use in weaponry and energy that is expanding the stockpile of HEU and plutonium, which may be vulnerable. A related trend is the involvement of organized crime networks in nuclear smuggling and trafficking. As international organized crime networks increasingly overlap and even merge with terrorist networks, this could be a route for terrorists obtaining technology or nuclear materials.⁴⁸¹

The last decade of the 20th century was significantly enhanced by the rapid globalization of information technologies. In fact, the very trends driving globalization—improved communications and transportation links—can enable development of extended proliferation networks that may facilitate the terrorist acquisition of WMD.

Several dimensions of the WMD threat convergence problem are: (1) the risks of non-state actors procurement of nuclear materials, (2) the potential for collaboration between state and non-state actors as an avenue for WMD proliferation, and (3) the range of motivations and internal rationales that make WMD terrorism attractive to terrorist groups.⁴⁸² This chapter highlights five issues that must be incorporated into the non-proliferation framework design.

⁴⁸¹ Gordon Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network* (Oxford University Press, 2009), 245.

⁴⁸² M. Karen Walker, *Threat Convergence: New Pathways to Proliferation, Terrorist Group Proclivity Toward the Acquisition and Use of Weapons of Mass Destruction: A Review of the Terrorism Studies Literature*, Fund for Peace, September 2001, 1.

B. TRANSNATIONAL TERRORISM AND THE RISE OF NON-STATE ACTORS

Transnational or “international terrorism” began in 1968 with the hijacking of an El Al flight, which is generally regarded as the beginning of the era of modern terrorism.⁴⁸³ Terrorism in this era was defined by bold political statements made through the target selection of the terrorist group. Often, the attacks targeted national symbols, and the attacks led to crises that could prove catastrophic.⁴⁸⁴ The aforementioned incident, carried out by the Popular Front for the Liberation of Palestine (PFLP), targeted innocent civilians and was used to attract the public’s attention for the terrorists’ political reasons of attempting to make the Palestinian issue known beyond the region.

9/11 and the years following have served to define what the evolving threat has come to look like. No longer are terrorists willing to take planes and remove the passengers, as was the case in the 1968 hijacking described above. Terrorist attack lethality has increased drastically since those early days and this apparent desire for an ever-higher body count has led analysts of the phenomena to question early assumptions about the terrorists’ lack of desire for WMD.⁴⁸⁵ While the 1960s, 70s and early 80s were generally defined by the instrumental use of violence by terrorists, the rise of religious terrorism has brought these earlier assumptions into question. As noted, in Chapter III, terrorism itself has arguably shown a marked trend toward greater lethality. Terrorist trends toward a higher and higher body counts suggests that some terrorists may seek to obtain and use these non-traditional weapons.⁴⁸⁶

⁴⁸³ Hoffman, *Inside Terrorism*, 63–64.

⁴⁸⁴ *Ibid.*, 64.

⁴⁸⁵ Brian Michael Jenkins, *The Potential for Nuclear Terrorism* (Santa Monica, CA: RAND Corporation, 1977), <http://www.rand.org/pubs/papers/P5876>, 4.

⁴⁸⁶ Bruce Hoffman, *Inside Terrorism* (London: Victor Goldberg, 1998), 201, citing the RAND Chronology of International Terrorism. Also see the *Report of the National Commission on Terrorism, Countering the Changing Threat of International Terrorism*, Pursuant to Public Law 277, 105th Congress, June 2000.

In the wake of these incidents, a new era of terrorism was perceived by experts and government officials alike who foresaw a potentially bloodier and more destructive age of violence emerging upon approaching the 21st century.⁴⁸⁷ This growing proclivity toward violence appears to be evidence of a portentous shift in terrorism, away from its traditional emphasis on discrete, selective attacks toward a mode of violence now aimed at inflicting indiscriminate and wanton slaughter. Certainly, such attacks as the 1993 car bomb attack that convulsed Bombay, India, the 1994 truck bomb explosion outside a Jewish community center in Buenos Aires, Argentina, the 1995 bombing of the Alfred P. Murrah federal building in Oklahoma City, the 1996 suicide truck bomb attack against the Central Bank in Colombo, Sri Lanka, and the 1998 twin U.S. embassy bombings in Kenya and Tanzania,⁴⁸⁸ the 2001 attacks on the Pentagon and New York city, all illustrate this development. The combination of new motives, different rationales, and increased opportunities, coupled with enhanced terrorist capabilities, may lead to a new era of terrorist violence more dangerous and deadly than in the past.⁴⁸⁹

In 1976, the CIA wrote a prophetic study entitled, *Patterns of Global Terrorism*, which concluded that globalization was an “irreversible trend” likely to aggravate the problem of terrorism in the coming years.⁴⁹⁰ However, the nature of transnational terrorism taught the nation not only about increasing violence, it also showed that terrorists are transnational criminals. Terrorist organizations are no longer constrained within a particular territory, or financially tied to a particular state.⁴⁹¹ Al-Qaeda has emerged to embody the quintessential qualities of a transnational terror organization and 9/11 attacks on the United States were transnational attacks by an organization that had

⁴⁸⁷ See M. Karen Walker, for a full discussion on the increasing lethality of terrorism see pp. 4–5, for example, Bruce Hoffman, “Terrorism and WMD: Preliminary Hypotheses,” *Non-Proliferation Review*, 4, no. 3, (Spring-Summer 1997), 45–53; John F. Sopko, “The Changing Proliferation Threat,” *Foreign Policy*, no. 105 (Winter 1996/1997), 3–14.

⁴⁸⁸ Hoffman, “Terrorism and WMD: Some Preliminary Hypothesis,” 46–47.

⁴⁸⁹ *Ibid.*, 46.

⁴⁹⁰ Central Intelligence Agency, *International and Transnational Terrorism: Diagnosis and Prognosis*, April 1976, 29–30. The report sets forth the following four trends of globalization that exacerbate terrorism: (1) clashes between conflicting ethnicities, (2) instability in urban settings, (3) increasing development of terrorist means and capacities, and (4) increasing susceptibilities of societies.

⁴⁹¹ Paul Smith, “Transnational Terrorism and the al Qaeda Model: Confronting New Realities” *Parameters* (U.S. Army War College), Summer 2002, 33–46.

established and maintained a multinational presence in more than 50 countries. The capacity of transnational organizations to generate spectacular fear and cause intensive damage to a nation-state became fully evident on 9/11.

The 2006 National Strategy to Combat Terrorism reflected on changes seen since 9/11:

Today, the principal enemy confronting the United States is a transnational movement of extremist organizations, networks, and individuals—and their state and non-state supporters - which have in common that they exploit Islam and use terrorism for ideological ends. This transnational movement is not monolithic. Although al-Qaida functions as the movement's vanguard and remains, along with its affiliate groups and those inspired by them, the most dangerous manifestation of the enemy, the movement is not controlled by any single individual, group, or state.⁴⁹²

In the weeks following the attacks, many criticisms pointed to a “massive intelligence failure” that had allowed the attacks to occur.⁴⁹³ One researcher wrote that the greatest intelligence failure of the 9/11 attacks constituted the inability on the part of intelligence and law enforcement agencies to grasp and understand that Al Qaeda represented a different type of terrorism, one “less anchored to specific geographic locations or political constituencies” and “one capable of achieving trans-global strategic reach in its operations.”⁴⁹⁴ The 9/11 attacks also exposed fundamental weaknesses of modern Western states, including vulnerable borders, inadequate immigration controls, and insufficient internal antiterrorism surveillance.⁴⁹⁵ Terrorism has now come to dominate the international security discourse. While the 9/11 attacks certainly revealed gaps in this nation's terrorism prevention efforts and physical border controls,⁴⁹⁶ it also revealed fundamental gaps in U.S. strategy to deal with this new transnational threat.

⁴⁹² White House, “The 2006 National Strategy to Combat Terrorism,” <http://www.whitehouse.gov/nsc/nsct/2006/>, 5.

⁴⁹³ Senator Richard Shelby on the CBS News Show Face the Nation on September 16, 2001 (file accessed through Lexis-Nexis) as recounted by Paul Smith in Smith, “Transnational Terrorism and the al Qaeda Model: Confronting New Realities,” 33–46.

⁴⁹⁴ Ed Blanche, “Al-Qaeda Recruitment,” *Jane's Intelligence Review*, 14 (January 2002): 27–28

⁴⁹⁵ A full discussion of the findings see *The 9/11 Commission Report*.

⁴⁹⁶ Ibid.

The United States has re-conceptualized its international security strategy, and sought to distinguish terrorism fully from crime by “declaring it an act of war.”⁴⁹⁷ Although threats have always existed between state actors, the emergence of terrorism as a viable and significant danger to the international community indicates that states are no longer the sole actors capable of initiating conflict while not being constrained in the same way states have traditionally been constrained. The 9/11 attacks have exposed the “asymmetric vulnerabilities of a highly interdependent global system.”⁴⁹⁸

However, as this new threat of a transnational terrorism emerged post 9/11, few frameworks deal with this transnational threat. As noted in the literature review, a review of the core documents reveals that proliferation concerns are built upon a nation-state paradigm, which made the issue of dealing with transnational terrorism involving WMD all the more complex. According to Martha Crenshaw, prior to 9/11, the prevailing theories of international relations terrorism was not considered an important national security issue unless it united two dangers simultaneously, a threat to the U.S. homeland, and the use of WMD.⁴⁹⁹ She continues to explain that even the idea of terrorism itself was not a critically important issue accepted by “foreign policy specialists inside or outside of government.”⁵⁰⁰ Indeed, the 9/11 attacks required the entire global community to rethink its approach to terrorism.

A challenge to the nation-state paradigm was highlighted in 2002/2003. The intelligence community posed a concern that Iraq may be a potential supplier of WMD to

⁴⁹⁷ George Bush first officially used the term in term “war on terror” on September 20, 2001 during his address to a joint session of Congress by saying, “our ‘war on terror’ begins with Al-Qaeda, but it does not end there. It will not end until every terrorist group of global reach has been found stopped or defeated.” George W. Bush, “Transcript of address to the Joint Session of Congress,” *CNN*, September 20, 2001, <http://edition.cnn.com/2001/US/09/20/gen.bush.transcript>.

⁴⁹⁸ Rolf Mowatt-Larssen, *The Armageddon Test*, Belfer Center Discussion Paper, #2009-09, Harvard Kennedy School, August 2009.

⁴⁹⁹ Martha Crenshaw as referencing work by Robert J. Art, “Geopolitics Updates: The Strategy of Selective Engagement,” *International Security*, 23, no. 3 (Winter 1998–99): 85.

⁵⁰⁰ Martha Crenshaw, “Terrorism, Strategies and Grand Strategies,” in *Attacking Terrorism: Elements of a Grand Strategy*, ed. Audrey Kurth Cronin and James Ludes (Washington, DC: George Washington Press, 2004), 74.

terrorist entities.⁵⁰¹ The United States lacked both the intellectual and organizational capacity to deal with the issue. President Bush wanted to remove Saddam Hussein through military action justified by the conjunction of terrorism and WMD.”⁵⁰² However, when it was later found that while Saddam may have been developing the capability for such a WMD program, the justification had no connection to the terrorist attack.⁵⁰³ However, perhaps poor intelligence is not the only reason for the flawed supposition. In the early days following 9/11, the nation lacked sufficient strategy outside of war to deal with transnational terrorism on this scale. Nevertheless, shifting the blame away from an autonomous, amorphous actor (Al Qaeda) back to a familiar nation-state antagonist (Iraq) was a way of shifting the balance of power back to a state-centric world and power balances within known international relations. This framework is limiting in that it allowed the United States to deal with terrorist groups only if they are proxies of the state,⁵⁰⁴ and may have led to inaccurate conclusions.

C. THE IMPACT OF GLOBALIZATION ON NON-PROLIFERATION NETWORKS

A related trend is the involvement of organized crime networks in nuclear smuggling and trafficking.⁵⁰⁵ Globalization, the process of increasing interconnectedness among worldwide entities, serves as an important backdrop to the emergence of proliferation networks.⁵⁰⁶ Globalization is making it easier for criminal networks to share information and to operate undetected in illegal trade by increasing the capacity of

⁵⁰¹ U.S. Library of Congress, Congressional Research Service, *Iraq: U.N. Inspections for Weapons of Mass Destruction*, Sharon A. Squassoni, CRS Report RL31671 (Washington, DC: Office of Congressional Information and Publishing, October 7, 2003), 13–14. See also Hoffman, “Inside Terrorism,” 19–20.

⁵⁰² Conversation cited by Richard Dearlove, former MI-6 in this report to Prime Minister Tony Blair. Quoted in Walter Pincus, “British Intelligence Warned Blair of War,” *Washington Post*, May 13, 2005. As reprinted in Hoffman, *Inside Terrorism*, 20.

⁵⁰³ This revelation caused much consternation on the part of both the American and international public about American political motives and the intelligence capabilities.

⁵⁰⁴ Crenshaw, “Terrorism, Strategies and Grand Strategies,” in *Attacking Terrorism: Elements of a Grand Strategy*, 90.

⁵⁰⁵ Sopko, “The Changing Proliferation Threat,” 6.

⁵⁰⁶ James A. Russell and Christopher Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, Conference Presentation Sponsored By the Advanced Systems Concepts Office of the Defense Threat Reduction Agency, presentation at Naval Postgraduate School, Monterey, CA June 29–July 1, 2005, 7.

terrorist groups to organize themselves into transnational networks for the purpose of coordinating operations across geographic boundaries.

The ability to sell weapons designs, as well as the availability of materials and dual use machines on the global black market, the availability of weapons designs on the Internet, and worldwide production capacity,⁵⁰⁷ are all direct results of the impact of globalization.

While the origins of terrorism are multiple and complex, globalization stands out as the means by which networked terrorism transforms to have international reach. Just as multinational corporations have evolved in response to globalization by distributing functions and resources, transnational terrorist groups have followed a similar path.⁵⁰⁸ The terrorist problem occurs in a context with many interacting entities and processes—some aspects of the system are hierarchical, others are distributed, still others are networked. Terrorist organizations, such as al Qaeda, function as complex adaptive systems.⁵⁰⁹ This networked and distributed structure is one characteristic of transnational terrorism that has made the insurgency movements and rogue actors more difficult to isolate and identify, and ultimately, remove.⁵¹⁰

From a security standpoint, currently, the most salient aspect is that an event in one part of the world is far more likely than in the past to have repercussions elsewhere. This interconnectedness is what one scholar terms, “the Ahmadinejad effect,” in which minor actors can rise to prominence and gain popularity by threatening the security of land and people even very far away.⁵¹¹ Globalization has revolutionized how the world does business—including terrorists. Commercial and technological innovations have reduced international trade barriers, and widened transportation infrastructure. Extensive

⁵⁰⁷ Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*, 242–243.

⁵⁰⁸ Business Executives for National Security, “Campaign 2010: Innovative Ideas for Securing America,” 2010, <http://www.bens.org/document.doc>.

⁵⁰⁹ Davis and Jenkins, *Deterrence and Influence in Counterterrorism*, 13.

⁵¹⁰ Distributed Networks and Leaderless Organizations is discussed in Ori Brafman and Rod A. Beckstrom, *Starfish and the Spider* (New York: Penguin Publishing, 2006).

⁵¹¹ Fathali M. Moghaddam, *The New Global Insecurity* (Praeger Press, 2010), 12.

Internet and cellular networks have fostered global communications. Technology has greatly facilitated the spread of highly sensitive information.⁵¹² Knowledge and information is easily shared over the Internet and is used in a number of ways including networking terrorists in different countries, recruiting jihadists, and spreading a radicalized agenda. The increasing ease of air travel, financial transactions, and trade may play a key role in enabling the emergence of complicated, global, proliferation networks. The ability to transcend borders means that the ability to move goods, services, and people internationally, is much easier.

Technological advancements have been incorporated to further criminal capabilities and operations that harm U.S. citizens and interests, sometimes without even having a physical presence in country.⁵¹³ These new types of actors have the operational capability to reach across international borders both physically and intellectually.

Moreover, the time when only a few states had access to the most dangerous technologies is long over. Technologies, often dual-use, circulate easily in our globalized economy, as do the personnel with scientific expertise who design and use them. Therefore, it is difficult for the United States and its partners to track efforts to acquire components and production technologies that are widely available. We assess countries that are still pursuing WMD programs will continue to try to improve their capabilities and level of self-sufficiency over the next decade. Nuclear, chemical, and/or biological weapons or the production technologies and materials necessary to produce them may also be acquired by states that do not now have such programs; and/or by terrorist or insurgent organizations; and by criminal organizations, acting alone or through middlemen.⁵¹⁴

⁵¹² For example, the Khan Network in Dubai began transferring material from paper to electronic formats. Eventually, investigators found the entire plan for an enrichment program in electronic form on a set of discs in Libya. See Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*, 242.

⁵¹³ Business Executives for National Security, *Supporting America's National Security Agenda Against Global Terrorism*, Issue Brief #4.

⁵¹⁴ *Annual Threat Assessment of the US Intelligence Community for the Senate Select Committee on Intelligence*, Dennis C. Blair Director of National Intelligence, 12.

Paul Smith may summarize it best:

Of greatest current concern is Al Qaeda which has been establishing and maintaining a multinational presence in more than 50 countries, directed by a base located (until recently) in Afghanistan. Like many multinational corporations, al Qaeda is both the product and beneficiary of globalization. The organization took advantage of the fruits of globalization and modernization - including satellite technology, accessible air travel, fax machines, the Internet, and other modern conveniences—to advance its political agenda.

No longer geographically constrained within a particular territory, or financially tied to a particular state, al Qaeda emerged as the ultimate transnational terror organization, relying on an array of legitimate and illicit sources of cash, including international charities that were often based in the West.⁵¹⁵

Like many multinational corporations, al Qaeda is both the product and beneficiary of globalization. The organization took advantage of the fruits of globalization and modernization—including satellite technology, accessible air travel, fax machines, the Internet, and other modern conveniences—to advance its political agenda. No longer geographically constrained within a particular territory, or financially tied to a particular state, al Qaeda emerged as the ultimate transnational terror organization, relying on an array of legitimate and illicit sources of cash. Probably its most important bases of operation—from a financial and logistical perspective—were located not in Afghanistan or Sudan, but rather in Western Europe and North America, including in the United States itself.⁵¹⁶ In fact, AQ actually has even used globalization as an explanation to justify its actions towards the West—”The Capitalist system seeks to turn the entire world into a fiefdom of the major corporations under the label of globalization in order to protect democracy.”⁵¹⁷

⁵¹⁵ Smith, “Transnational Terrorism and the al Qaeda Model: Confronting New Realities,” 33–46.

⁵¹⁶ Ed Blanche, “What the Investigation Reveals,” *Jane’s Intelligence Review*, 13 (November 2001), 16–17; see also article by John Mintz and Rom Jackman, “Finances Prompted Raids on Muslims,” *The Washington Post*, March 24, 2001, A01.

⁵¹⁷ SITE Intelligence Group, “The Solution,” September 2007, <http://counterterrorismblog.org/site-resources/images/SITE-OBL-transcript.pdf>.

A related trend is the involvement of organized crime networks in nuclear smuggling and trafficking. Globalization has had a substantial impact on changing the paradigm for proliferation. As terrorists are now better able to move, goods, operations and people, they are also able to move operations and technology, and knowledge related to WMD.

Initial information found in Libya identified roughly half a dozen workshops spread across Africa, Asia, and the Middle East that were making centrifuge components.⁵¹⁸ These workshops would typically import the items needed, such as metals, equipment, or components. After the components were produced, they would be sent to Dubai under false certificate where they would be repackaged and sent to Libya.⁵¹⁹

The seizure of the BBC China en route to Libya and the revelation that it held uranium-enriched gas-centrifuge components, started to paint a picture of how Khan's network operation captured many of these phenomena simultaneously. The shipment interdicted was arranged by a business middleman based in Dubai. The Malaysian firm, at the direction of Khan's associates, established a factory in Shah Alam, Malaysia to fill this order. Foreign engineers who would travel to Malaysia periodically to assist with production provided technical assistance to the factory. The products were then shipped via Dubai to Libya, and ultimately were intercepted along the way on the BBC China, a German owned ship.⁵²⁰ Investigations showed that the Khan network was able to leverage the advantages of globalization to sustain its operations, and also, to avoid detection.

⁵¹⁸ Albright and Hinderstein, "Unraveling the A.Q. Khan Network and Future Proliferation Networks," 115.

⁵¹⁹ Ibid., 112–113.

⁵²⁰ This account is an amalgamation of facts found in Albright and Hinderstein, "Unraveling the A.Q. Khan and Future Proliferation Networks," 111); Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*; Esther Pan, "Nonproliferation: The Pakistan Network," *Council of Foreign Relations, Background*, February 12, 2004; Russell and Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*.

D. THE CHAIN OF CAUSATION

To highlight the impacts globalization has on transnational crime and illegal proliferation networks, this paper looks at seven essential steps that a terrorist would have to take to be successful in an attack.⁵²¹ Assumption from the research is that a WMD attack is a low-probability, high consequence, and for terrorists, not necessarily a first choice because they would likely face significant hurdles.⁵²² While a group may obtain them through different paths, it would still need to carry out the escalation ladder (perhaps laterally, not necessarily sequentially).⁵²³ Achieving all seven steps would essentially complete the cycle of motive, mean, and opportunity.

This section highlights those steps that may be easier to achieve because of the impacts of globalization. The other elements in this chain have been discussed throughout the paper. This part examines strictly WMD attacks through the hermeneutic of globalization, in addition to how globalization is impacting these types of terrorist events to find opportunities to interrupt the planning cycle to prevent such an attack.

The seven steps are as follows.⁵²⁴

- The terrorist group must decide to embrace violence to achieve its goals
- These group must then choose to acquire CBRN weapons to advance its objectives
- The group must then obtain the materials, such as chemicals, biological agents radioactive sources, or weapons-usable nuclear materials, to make CBRN weapons
- Next the terrorist must acquire the requesting technical skills and knowledge either through learning or buying the services of technical experts

⁵²¹ Aside from acquiring WMD material, these are the same steps used in steps in carrying out any terrorist attacks

⁵²² See research citations in Chapter III.

⁵²³ Michael Levi talks extensively about the concept of “Building Blocks” or steps needed to undertake for a terrorist carry out a nuclear attack in chapter 3 of his book Levi, *On Nuclear Terrorism*, 27–64.

⁵²⁴ These steps are discussed throughout the terrorist literature individually but this list is pulled from Simpson, “WMD Terrorism.” in *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy*, 37–39. Michal Levi walks though similar steps through three broad categories; the acquisition of nuclear material, bomb building and transporting nuclear material and consequence management.

- Then the terrorist group must combine the knowledge and skills with the CBRN materials to build an effective weapon
- The group must next deliver the weapon or weapons to a target, such as a populated city or a place associated with political, military, or economic value
- The CBRN weapon must then cause sufficient damage to achieve the terrorist group's political, religious or other motivational goals

A step-by-step look of how globalization may make achieving these steps easier follows.

The first is the decision to embrace violence to achieve its goals. As this has been documented on paper, many groups (in theory and in practice) are willing to use violence to achieve their goals.⁵²⁵ In terms of globalization, it becomes easier for recruiting and spreading a violent message. The Internet is part of the process connecting aspiring terrorists with like-minded individuals or actual terrorists operating out of countries across the globe. After consolidating relationships over the Internet, the recruits can then plot and plan mass casualty attacks while remaining in contact with their handlers from removed locations.⁵²⁶ With the creation of the Internet and the “global village” it established, information could be exchanged nearly instantaneously. According to the United States Institute of Peace, the main ways that terrorist organizations employ the Internet is to spread propaganda, fundraise, recruitment, psychological warfare, data mining, and coordinating actions.⁵²⁷

Secondly, these groups must then choose to acquire CBRN weapons specifically to advance their objectives. As said, it may or may not occur depending on a group's political or religious motivations and assessment of risk and failure, but some may believe WMD terrorism would advance its goals under certain circumstances.⁵²⁸ Although building a nuclear device remains an expensive, complex undertaking out of

⁵²⁵ See research Chapter III.

⁵²⁶ Sajian M. Gohel, *The Internet And Its Role in Terrorist Recruitment and Operational Planning*, Combating Terrorism Center, West Point Publication, December 3, 2009.

⁵²⁷ United States Institute of Peace, “How Modern Terrorism Uses the Internet,” 2004, <http://www.usip.org/pubs/specialreports/sr116.html>.

⁵²⁸ Levi, *On Nuclear Terrorism*, 11.

reach for most organizations, a well-financed group that seeks to kill very large numbers of people may find it an “irresistible option.”⁵²⁹ However, given all that is involved in the complicated calculations of a terrorist organization’s operational choices, if a terrorist group decides to pursue the use of WMD, globalization certainly makes that decision easier to execute it. The globalized marketplace allows for the easier transfer of materials, tools, and expertise to be possible. The open global economy allows greater opportunity for connectivity and the transfer of goods and services.

Third, the group must actually attempt to obtain the materials, such as chemicals, biological agents, radioactive sources, or weapons-usable nuclear materials, to make CBRN weapons. Historically, it has been the biggest focus on non-proliferation—efforts to physically secure materials, weapons, and expertise. Collaborative Threat Reduction programs, such as the Nunn-Lugar and G-8 and Materials Protection, Control and Accounting have comprised the basis for regime efforts. Again, globalization increases these opportunities for success and provides a platform on which to operate to all black market proliferation networks in a global market. For example, the A.Q. Kahn was able to manipulate business and exploit holes in the global enforcement system.⁵³⁰ The Khan network succeeded for many years by exploiting weaknesses in export control systems and recruiting suppliers.⁵³¹

The financing of terrorism also plays an important role in WMD terrorism (especially nuclear terrorism) since it will take a lot of money to purchase either a weapon or special nuclear material on the black market,⁵³² from money that would most likely be raised and spent in the global market. These integrated financial systems allowing global movements of money that can be easily exploited by criminals and terrorists.

⁵²⁹ Zimmerman and Lewis, “Bomb in the Backyard.”

⁵³⁰ Albright and Hinderstein, “Unraveling the A.Q. Khan and Future Proliferation Networks,” 116–120.

⁵³¹ *Ibid.*, 112.

⁵³² The article walks through a scenario of how much each step of building a nuclear weapon may cost. Zimmerman and Lewis, “Bomb in the Backyard.”

Fourth, the terrorist must acquire the technical skills and knowledge either through learning or buying the services of technical experts. Information readily available on the Internet provides skills to make weapons (conventional and WMD) much more available to anyone with Internet access. Unemployed scientists are another concern since left without other options could be corrupted in working for entities willing to pay for the expertise. Technology diffusion, imply put, are deadly technologies that are now “spreading horizontally and descending vertically.”⁵³³ The problem is dramatically more widespread in terms of chemical and biological weapons technology. Hundreds of countries have an infrastructure that could be used for chemical weapons production. While only a dozen countries are believed to be pursuing biological weapons, many more could do so. All these challenges are exacerbated because of the dual-use nature of many of the underlying technologies.

Fifth, the terrorist group must then combine the knowledge and skills with the CBRN materials to build effective weapons. Again, globalization makes all the pieces easier to connect. The global market allows access to the materials, and can link people with the technical experts to make them. International travel between countries is common. The global market makes moving parts, material, and weapons harder to detect under the guise of normal commerce.

Sixth, the group must next deliver the weapon or weapons to a target. Once a weapon is complete, it is much more difficult to detect.⁵³⁴ Nuclear interdiction efforts at the ports, land borders, and random detection efforts exist, but finding a weapon that may be shielded, and without intelligence, is like trying to find a needle in a haystack.

⁵³³ Russell and Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, 5.

⁵³⁴ See U.S. Library of Congress, Congressional Research Service, *Detection of Nuclear Weapons and Materials: Science, Technologies, Observations*, by Jonathan Medalia, CRS Report R40154 (Washington, DC: Office of Congressional Information and Publishing, June 4, 2010); *Testimony before the Subcommittee on the Prevention of Nuclear and Biological Attack and on Emergency Preparedness, Science, and Technology, Committee on Homeland Security*, “Combating Nuclear Smuggling, Efforts to Deploy Radiation Detection Equipment in the United States and in Other Countries, House of Representatives, Statement of Gene Aloise, Director Natural Resources and Environment, Tuesday June 21, 2005.

Chemical and biological weapons have even more difficult indicators to detect. Also, the terrorist is required to travel.

Finally, a WMD weapon must then cause sufficient damage to achieve the terrorist group's political, religious, or other motivational goals. Even though this attack is a low-probability event, such an attack would have far-reaching and devastating consequences. Issues involved in the "right of boom" are also important to deal with because of the lasting impact they will have should it not be possible to prevent an attack, and subsequently, it will be necessary to deal with the consequences. Terrorism expert Brian Jenkins made famous the quote more than two decades ago, "Terrorists want a lot of people watching and a lot of people listening and not a lot of people dead." Live international news coverage that would be broadcast around the world on live TV certainly would have international exposure to billions of people.⁵³⁵

The Defense Threat Reduction Agency sponsored a project to assess the causes and consequences of the proliferation of WMD in the Middle East. In that report, a consistent theme in the research revealed issues related to how third-state and non-state entities assisted in proliferation activities,⁵³⁶ but there were more questions, than answers. James Russell, who served as the lead researcher on this project, argued that globalization had produced ungoverned spaces—holes—in the international system. States were no longer the "major controller or conduit" of global trade, financial, and information flows, which provides space and resources—a metaphorical "dark underbelly"—for non-state actors to exploit.⁵³⁷

Certainly, the forces that come under the general heading of globalization can be counted upon to intensify over the next several decades and will create a deepening global interdependence.⁵³⁸ The result will most likely be a continued growth in the cross border flows of goods, services, people, technology, ideas, customs, and crime.

⁵³⁵ Brian Michael Jenkins, "International Terrorism: A New Mode of Conflict" in *International Terrorism and World Security*, ed. David Carlton and Carlo Schaerf (London: Croom Helm, 1975), 15.

⁵³⁶ Russell and Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, 1.

⁵³⁷ *Ibid.*, 8.

⁵³⁸ Moughaddam, *The New Global Insecurity*, 1–2, 14.

Weapons proliferation has its tentacles in all that is promising and dangerous in this new world economy. Globalization and nonproliferation and other efforts, such as intelligence, terrorist travel, and illegal commerce are most likely to intersect. However, red flags will not always be clear. One researcher summarized this problem:

In some respects global trade has become more opaque rather than more transparent partly because of its volume, the number of import-export companies, the diversity of freight-forwarders, and the existence of flags of convenience which make the maritime industry itself non-transparent.⁵³⁹

E. TECHNOLOGY DIFFUSION AND KNOWLEDGE DISTRIBUTION

Knowledge, which was formally only possessed by nation-states, is no longer exclusive, and now a growing number of non-state actors have access to sensitive materials and technologies. The information revolution and the impacts of globalization are felt on open and black markets leading some terrorist groups that lacked the global reach of a pre-9/11, including Al Qaeda, which has been able to form regional alliances, to share knowledge and technologies. The Kahn network was able to exploit loopholes in the export control system. The diffusion of manufacturing capability made activity difficult to detect. It also meant that countries may not have had adequate knowledge of nuclear technology or expert controls to detect illicit activity and were induced to either knowingly or unknowingly assist in the manufacture and distribution process.⁵⁴⁰

In the post-Cold War environment, national security, economic interests and technology relate to one another in complex and cross-cutting ways. One reason for the biggest changes in WMD proliferation is technology. Weapons formally restricted to the arsenals of large industrialized nation-states are now within reach of small states and some non-state actors.⁵⁴¹ The biggest danger may be that due to technology, that now

⁵³⁹ Phil Williams, *Globalization and WMD Proliferation Networks*, Presentation at the Naval Postgraduate School, Monterey, CA, July 1, 2005.

⁵⁴⁰ David Albright and Corey Hinderstein, "Unraveling the A.Q. Khan and Future Proliferation Networks," *The Washington Quarterly*, Spring 2005, 119–121.

⁵⁴¹ Randall Larsen, *Our Own Worst Enemy* (New York: Grand Central Publishing, 2007), 4.

allows small, non-state actors to threaten virtually any state—including a superpower like the United States. The disruption of the A.Q. Kahn network certainly showed that nuclear technology transfers were easier than anticipated.⁵⁴²

The starting point is an appreciation that technology consists of more than just physical “things.” Harvey Brooks has defined technology as “knowledge of how to fulfill certain human purposes in a specific and reproducible way.” He continues to argue that technology “does not consist of artifacts but of the ...knowledge that underlies the artifacts and the way they can be used in society.”⁵⁴³ In terms of WMD technology, it means possessing the human technical capital necessary to develop WMD capability.

The knowledge and machinery for legitimate enterprise can often be hijacked for dangerous ends. In the nuclear realm, states still retain a heavy degree of control but in the chemical and biological world, much of the expertise and equipment is readily available in the private sector. However, even in this instance, the network of suppliers that collaborated with A.Q. Kahn indicates that significant nuclear-relevant technologies could be acquired from non-state entities whether they are willing proliferators or unwitting collaborators. In fact, “nuclear components designed in one country could be manufactured in another, shipped through a third, assembled in a fourth, and designated for eventual turnkey use in a fifth.”⁵⁴⁴ The experience seems to indicate that it is not a geographically bounded problem. This diffusion of science and technology will only continue.⁵⁴⁵

Now, technology diffusion is available via the Internet. The forces of globalization make it easier for anyone to acquire nuclear technology. Indeed, even

⁵⁴² Benoit Pelopidas, “The Oracles of Proliferation: How Experts Maintain a Biased Historical Reading That Limits Policy Innovation,” *Nonproliferation Review* 18, no. 1 (March 2011, 298); see also Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*.

⁵⁴³ Harvey Brooks, “Technology: Evolution and Purpose,” in “Modern Technology Problems or Opportunity,” *Daedalus* 109 (Winter 1980).

⁵⁴⁴ Mohamed ElBaradei, *Nuclear Non-Proliferation: Global Security in a Rapidly Changing World*, (Carnegie International Non-proliferation Conference, Washington, DC: June 21, 2004), <http://www.ceip.org/files/projects/npp/resources/2004conference/speeches/ElBaradei.doc>.

⁵⁴⁵ Russell and Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, 6–8.

before the advent of the Internet, “nuclear secrets” were released publicly. For instance, in 1964, the *Los Alamos Primer* revealed many of the technical details of atomic weapons designs. Then, *Progressive* did the same for hydrogen weapons in the November 1979 and January 1980 editions.⁵⁴⁶ Now, the Internet revolution makes it even easier to acquire key technical information.

Technology certainly plays a role in recruiting new jihadists and in disseminating information. It is well documented that the Internet is used to recruit and to radicalize individuals and train them to execute terrorist acts.⁵⁴⁷ In part, thanks to the Internet, according to military and counterterrorism experts testifying on Capitol Hill.⁵⁴⁸ The Internet plays an important role in contemporary terrorism, as jihadists have effectively demonstrated. It allows global communications, which is critical to a movement determined to build an army of believers. It facilitates recruiting. It is accessible to seekers to reinforce and channel their anger. It creates online communities of like-minded extremists and engages them in constant activity. It is a source of instruction. It facilitates clandestine communication.⁵⁴⁹

In summary, the information revolution has made critical technological information available to an increasing number of less capable states and some non-state actors. The significant barriers to entry that remain should not be minimized, particularly with regards to nuclear weapons, but it does mean that analysts and policymakers must

⁵⁴⁶ Reiss, “Foreword” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, xiii.

⁵⁴⁷ See Brian Michael Jenkins, *Is Al Qaeda’s Internet Strategy Working?* (Santa Monica, CA: RAND Corporation, 2011), <http://www.rand.org/pubs/testimonies/CT371>; Eben Kaplan, “Terrorists and the Internet,” *Council on Foreign Relations, Background*, January 8, 2009, <http://www.cfr.org/terrorism-and-technology/terrorists-internet/p1000>; Jarret M. Brachman, “High-Tech Terror: Al-Qaeda’s Use of New Technology,” *The Fletcher Forum of World Affairs* 30, no. 2 (Summer 2006): 149–164; Gabriel Weimann, “How Modern Terrorism Uses the Internet,” *The Journal of International Security Affairs*, no. 8, Spring 2005.

⁵⁴⁸ Gordon Lubold, “Internet Aids Terrorist Recruiting, Radicalization, Pentagon Say,” *CSM*, March 2010.

⁵⁴⁹ Brian Michael Jenkins, “No Path to Glory” *Testimony presented before the House Homeland Security Committee, Subcommittee on Intelligence, Information Sharing and Terrorism Risk Assessment*, May 26, 2010.

consider an environment characterized by the seemingly irreversible diffusion of technology.⁵⁵⁰

In the face of these dynamics, the international community confronts a major challenge in managing global technology diffusion in a way that achieves international security goals while promoting commercial and other objectives.

In the new security era, the problem extends well beyond weapons as they relate to proliferation. The problem facing the international community is “not about weapons systems but about the diffusion of technology—some advanced, some simple. All potentially lethal.”⁵⁵¹

F. DETERRENCE MAY NOT BE AN EFFECTIVE STRATEGY FOR NON-STATE ACTORS

Concerns about whether deterrence is an effective strategy against the security threats now faced have left policymakers and academics debating the very relevance of deterrence in the 21st century.⁵⁵² When the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism released *The World at Risk Report*, it warned that deterrence might not prevent a terrorist group from using WMD against the United States in the near future.⁵⁵³

For the last half century, the concept of deterrence has served as a cornerstone to U.S. foreign policy and weapons complex doctrine. In the classic sense, deterrence has been defined as “persuading a potential enemy that he should in his own interest avoid

⁵⁵⁰ Russell and Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, 5–6.

⁵⁵¹ Michael Moodie, “Beyond Proliferation: The Challenge of Technology Diffusion,” *The Washington Quarterly* 18, no. 2 (1995): 183.

⁵⁵² Jeffrey W. Knopf, “Wrestling with Deterrence: Bush Administration Strategy after 9/11,” *Contemporary Security Policy* 29, no. 2 (August 2008): 229–65; Ward Wilson, “The Myth of Nuclear Deterrence,” *Nonproliferation Review* 15, no. 3 (November 2008): 421–439; Lawrence Freedman, *Deterrence* (London: Polity, 2004); Patrick M. Morgan, “Taking the Long View of Deterrence,” *The Journal of Strategic Studies* 28, no. 5 (October 2005): 751–63.

⁵⁵³ *Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, World at Risk: Report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism* (Washington, DC: Government Printing Office, 2008).

certain courses of activity.”⁵⁵⁴ During the Cold War, deterrence served as a foundational strategy to protect itself from Soviet aggression from both nuclear and conventional forces. The Cold War deterrence model rested on a “balance of terror,” with complementary superpower capability. During a speech in 1992, President Bush said:

...for much of the last century, America’s defenses relied on the Cold War doctrines of deterrence and containment. In some cases, those strategies still apply, but new threats also require new thinking. Deterrence—the promise of massive retaliation against nations—means nothing against shadowy terrorist networks with no nation or citizens to defend.⁵⁵⁵

Two types of deterrence exist. The first is “deterrence by the threat of punishment,” which compels the adversary to try to calculate whether the potential benefits of action are outweighed by the potential costs. The second is “deterrence by denial.” This mode relies on denying the adversary the perceived benefit of action.⁵⁵⁶

However, deterrence can take on many subtle means that can differ in interpretation. One such definition involves persuasion of the enemy, such as “influencing the choices another party will make, and doing it by influencing his expectations of how we will behave.”⁵⁵⁷ It involves “confronting him with evidence for believing that our behavior will be determined by his behavior.”⁵⁵⁸

According to military doctrine, deterrence “stems from the belief by a potential aggressor that a credible threat of retaliation exists, the contemplated action cannot succeed, or the costs outweigh any possible gains. Thus, a potential aggressor is reluctant to act for fear of failure, cost, or consequences.”⁵⁵⁹ These three concepts or strategies—

⁵⁵⁴ Thomas Schelling, *The Strategy of Conflict* (Cambridge, MA.: Harvard University Press, 1960), 9.

⁵⁵⁵ Commencement Address at the United States Military Academy in West Point, New York, 38 Weekly Comp. Pres. Doc. 944, 946, June 1, 2002.

⁵⁵⁶ Glenn H. Snyder, *Deterrence and Defense: Toward a Theory of National Security* (Princeton, NJ: Princeton University Press, 1961).

⁵⁵⁷ Schelling, *Strategy of Conflict*, 13.

⁵⁵⁸ Ibid.

⁵⁵⁹ Joint Chiefs of Staff, *Joint Pub 3-07, Joint Doctrine for Military Operations Other Than War*, June 16, 1995, 5

fear of failure, cost, and consequences—each by itself or in any combination, are key in formulating options, including application of military power, to deter WMD use.⁵⁶⁰

Perhaps, the most accurate definition defines deterrence as the “prevention of action by fear of negative consequences, for the purpose of convincing a party not to take some action by threatening the destruction of something he considers to be of great value, or by denying him achieving his objectives.”⁵⁶¹ Traditional formulations of deterrence include aspects of both capability and will in assessing the credibility of a deterrent threat. They also require that the deterrent threat be communicated to the party being deterred.⁵⁶² (In short, Credibility + Capability = Will)

However, given the complexities inherent in conventional counter proliferation strategies, some value in rethinking models of deterrence appear in the world after 9/11. Deterrence is a psychological phenomenon. It must be determined how deterrence operated in the past and how it may differ with the new set of actors. Since today’s “enemies” are more likely transnational terrorists rather than nation-states (either superpowers or “rogue”), they may be motivated by different imperatives, and deterrence may not be an effective strategy to either compel terrorists to develop or use WMD capabilities. “The logic of deterrence that once kept state violence in some kind of check has no traction with loners and the cult leaders of global terrorism.”⁵⁶³

A new “deterrence calculus” may be needed.⁵⁶⁴

⁵⁶⁰ Brad Roberts, *Deterrence and WMD Terrorism: Calibrating its Potential Contributions to Risk Reduction*, IDA Paper P-4231 Log: H 07-000775, Institute for Defense Analysis, June 2007.

⁵⁶¹ Definition provided by Jeffrey A. Larson for ICGG July 23, 2011.

⁵⁶² Maj Dale A. Blackburn et al., “A National Policy for Deterring the Use of Weapons of Mass Destruction,” Research Paper Presented To The Directorate of Research Air Command and Staff, ACSC/DE/102/96-04, April 1996, 11.

⁵⁶³ Michael Ignatieff, *The Lesser Evil: Political Ethics in an Age of Terror* (Princeton University Press, 2004), 151.

⁵⁶⁴ For a discussion of Defense Department thinking about the challenges of tailoring deterrence to new security requirements, see M. Elaine Bunn, “Can Deterrence be Tailored,” National Strategic Studies National Defense University, *Strategic Forum* 225 (January 2007): 1, <http://www.ndu.edu/inss>

In the case of non-state actors, how does this doctrine translate?, as terrorists may not have any goods they value that can be threatened to produce deterrence.⁵⁶⁵ Certainly, the unpredictability, rationality, and motivations of a non-state terrorist organization are not balanced on this premise.

The *National Security Strategy* issued in 2002 summarized the prevailing view as follows:

Traditional concepts of deterrence will not work against a terrorist enemy whose avowed tactics are wanton destruction and the targeting of innocents; whose so-called soldiers seek martyrdom in death and whose most potential protection is statelessness.⁵⁶⁶

The 2006 National Strategy expanded to say:

The new strategic environment requires new approaches to deterrence and defense. Our deterrence strategy no longer rests primarily on the grim premise of inflicting devastating consequences on potential foes. Both offenses and defenses are necessary to deter state and non-state actors.⁵⁶⁷

In a report for the State Department entitled, *Deterrence and WMD Terrorism: Calibrating its Potential Contributions to Risk Reduction*, the author argues that deterrence is not irrelevant to the effort to combat terrorism and to reduce the risks of WMD terrorism. His assessment that “the shift in national guidance from 2001 to 2005 makes good sense because the record suggests that deterrence has played a more important role in reducing the risks of terrorism than was understood in the immediate aftermath of 9/11.”⁵⁶⁸

The report further assesses the effectiveness of applying deterrence to WMD terrorism to say that, “the role of deterrence is foundational to national security strategy in the way that it was in the Cold War. Deterrence is but one of many tools of influence

⁵⁶⁵ Brown, “New Nuclear Realities,” 10.

⁵⁶⁶ *National Security Strategy of the United States of America*, September 2002.

⁵⁶⁷ *National Security Strategy of the United States of America*, March 2006.

⁵⁶⁸ Roberts, *Deterrence and WMD Terrorism: Calibrating its Potential Contributions to Risk Reduction*.

and sometimes not the most promising one.”⁵⁶⁹ However, should a low-probability high consequence WMD event occur, he offers three key judgments relative to deterrence, (1) deterrence may succeed in lowering the lethality of individual attacks with WMD, by inhibiting the cooperation of those most capable of developing and employing WMD in ways that reap their full lethal potential, (2) deterrence may succeed in curtailing campaigns of attacks. Such campaigns are the most certain way to reap the full lethal potential of WMD and seem particularly plausible with biological weapons, and (3) deterrence may induce the leadership of al Qaeda to utilize nuclear weapons, when and if they acquire them, only for purposes of deterrence and defense as they conceive them rather than for purposes of aggression and terrorism.⁵⁷⁰

Some preliminary thinking on facets of these questions has already been done at senior levels of government. To cite in full the guidance on deterring WMD terrorism from the *National Strategy for Combating Terrorism*:

A new deterrence calculus combines the need to deter terrorists and supporters from contemplating a WMD attack and, failing that, to dissuade them from actually conducting such an attack. Traditional threats may not work because terrorists show a wanton disregard for the lives of innocents and in some cases for their own lives. We require a range of deterrence strategies that are tailored to the situation and the adversary. We will make clear that terrorists and those who aid or sponsor a WMD attack would face the prospects of an overwhelming.⁵⁷¹

In considering the changing role of deterrence in the non-proliferation regime, one argument is that the extension of the discussion is that on a case-by-case basis more nuclear weapons may lead to greater stability.⁵⁷² Again, this discussion involved nation-states; however, the logic of the argument may extend to the individual actor, because the result depends on the internal stability, rationality, and command and control regime of

⁵⁶⁹ Roberts, *Deterrence and WMD Terrorism: Calibrating its Potential Contributions to Risk Reduction*, 26.

⁵⁷⁰ Ibid., 28.

⁵⁷¹ *National Strategy for Combating Terrorism*, September 2006, 14.

⁵⁷² This discussion is undertaken in the nation-state paradigm undertaken in the nation-state paradigm in the chapters discussing “More May Be Better” Sagan and Waltz, *The Spread of Nuclear Weapons*.

expected regimes.⁵⁷³ Looking at deterrence from this perspective begins to move the dialogue and motivations away from the old Cold War theories of application.

One academic postulates that this debate is not an outright rejection of deterrence, but rather recognition of the need to craft different deterrence options for different adversaries,⁵⁷⁴ but is lacking a consensus on what that should look like. Richard Betts argued deterrence has “limited efficacy for modern counterterrorism” because al Qaeda does not mirror the top-down organizational construct that dominates militaries or governments.⁵⁷⁵ Others say that the idea of rationality simply does not apply to terrorist or non-state actors who represent radical groups that calculate “risks and rewards in ideological and religious terms.”⁵⁷⁶ One RAND study concludes that in facing the challenge of modern suicide terror attacks, “the concept of deterrence is both too limiting and too naive to be applicable to the war on terrorism.”⁵⁷⁷

The application of a “tailored deterrence” theory would bridge the gap between academia and policy making. For one strategist, it represents, “a shift from a one-size-fits-all notion of deterrence toward more adaptable approaches suitable for advanced military competitors, regional WMD states, as well as nonstate terrorist networks.”⁵⁷⁸ “Deterrence is about influencing the perceptions—and ultimately, the decisions and actions—of another party; it is logical that requirements for deterrence will differ with each party that we might try to deter and may well differ in each circumstance or scenario.”⁵⁷⁹

⁵⁷³ Brown, “New Nuclear Realities,” 9.

⁵⁷⁴ Jeffrey S. Lantis, “Strategic Culture and Tailored Deterrence: Bridging the Gap between Theory and Practice,” *Contemporary Security Policy* 30, no. 3 (December 2009): 470.

⁵⁷⁵ Richard K. Betts, “The Soft Underbelly of American Primacy: Tactical Advantages of Terror,” in *September 11, Terrorist Attacks, and U.S. Foreign Policy*, ed. Demetrios James Caraley (New York: Academy of Political Science, 2002), 46.

⁵⁷⁶ Daniel Whiteneck, “Deterring Terrorists: Thoughts on a Framework,” in *Weapons of Mass Destruction and Terrorism*, ed. Russell D. Howard and James J. F. Forest (New York: McGraw-Hill, 2008), 337.

⁵⁷⁷ Davis and Jenkins, *Deterrence and Influence in Counterterrorism*, xviii.

⁵⁷⁸ M. Elaine Bunn, “Can Deterrence Be Tailored?,” *Strategic Forum*, January 2007, 1.

⁵⁷⁹ *Ibid.*, 3.

In closing, the viability of traditional deterrence strategy may now be questionable with respect to these new WMD threats and actors. New questions need to be asked, such as what role might deterrence already be playing? What more can reasonably be asked of deterrence against such a diffuse and motivated enemy? As is with nature of most preventive measures, the cumulative effect of deterrence in the WMD terrorism is nearly impossible to predict but certainly, a new calculus must be considered.

G. CREDIBILITY AND INTELLIGENCE FAILURES

As discussed above, attempts to manage these new types of terrorist threats have proven difficult. Since 9/11, the United States has struggled with how to situate the terrorist threat outside of the traditional state-centric paradigm. The Iraq War typified the struggle to re-imbed the networked threat of terrorism back into the familiar conflict models.

The decision to invade Iraq was largely based upon the premise that its leader, Saddam Hussein, was attempting to develop, and may even possess WMD. Said President Bush just before the Iraq war began, “The Iraqi regime . . . possesses and produces chemical and biological weapons. It is seeking nuclear weapons. We know that the regime has produced thousands of tons of chemical agents, including mustard gas, sarin nerve gas, VX nerve gas.”⁵⁸⁰ Decision making at the executive policy level was largely based upon the 2002 NIE, other CIA documents, and highly classified Presidential daily briefings. The shortcomings of American intelligence assessment of Iraq’s WMD program greatly undermined American trust and credibility.⁵⁸¹

As is publicly known, the invasion proved fruitless—sufficient evidence of WMD programs were not found, nor was evidence supporting Iraqi intent to re-establish Iraq’s nuclear programs. Many pundits and the public dismissed that justification of going to war as part of President Bush’s larger political agenda. The miscalculation certainly led to speculation that the U.S. intelligence community was flawed in making accurate

⁵⁸⁰ From President George W. Bush, October 7, 2002, Z facts.com.

⁵⁸¹ Reiss, “Foreword” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, xii.

assessments. In fact, the CIA noted that their assessment of Al Qaeda ties to Iraq, “rests on a bed of fragmented, conflicting reporting from sources of varying reliability.”⁵⁸²

Between 2004 and 2008, the CIA produced six retrospective documents on the Iraq War. In 2008, the Senate Intelligence Committee released the report *Postwar Findings About Iraq’s WMD Programs and Links to Terrorism and How They Compare with Prewar Assessments Senate Report of the Select Committee on Intelligence*. Key issues of inquiry included the quality of U.S. intelligence on Iraq’s WMD programs, the country’s links to terrorism (specifically the link to al Qaeda) and the “reasonableness, independence and accuracy” of the judgments reached by the intelligence community.⁵⁸³ The committee noted that the CIA reviewed four possible intersections between al Qaeda operatives and the Iraqi regime—none of which suggested evidence of operational cooperation. In each instance, the CIA described the intelligence, which suggested the links, and also included information about the reporting, which led to continued skepticism.⁵⁸⁴

This comprehensive retrospective, reviewed in both classified and unclassified information,⁵⁸⁵ followed the intelligence known prior to the 2003 invasion compared to what was known post-war. Its key finding concluded that “no established relationship between al-Qaeda leaders and Saddam Hussein before the 2003 war in Iraq.”⁵⁸⁶ The report’s findings were largely based upon conclusions drawn from the Intelligence Community’s 2002 National Intelligence Estimate (NIE), which concluded that the information on Iraq’s WMD programs were either “overstated, or not supported by the underlying intelligence reporting.”⁵⁸⁷

⁵⁸² CIA, *Iraq and al-Qa’ida: Interpreting a Murky Relationship*, June 21, 2002, 1.

⁵⁸³ *Postwar Findings About Iraq’s WMD Programs and Links to Terrorism and How They Compare with Prewar Assessments*” Senate Report of the Select Committee on intelligence, September 8, 2006, 4.

⁵⁸⁴ *Ibid.*, 64–79.

⁵⁸⁵ This paper cites only the unclassified version of the 2008 report.

⁵⁸⁶ *Postwar Findings About Iraq’s WMD Programs and Links to Terrorism and How They Compare with Prewar Assessments*” Senate Report of the Select Committee on intelligence, 99.

⁵⁸⁷ *Ibid.*, 2–5; also see *Report on the U.S. Intelligence Community’s Prewar Intelligence Assessments on Iraq*, Senate Select Committee on Intelligence, S. Rept. 108–301, July 7, 2004, 17.

The Robb-Silberman’s overall commission’s findings on the U.S. Intelligence regarding Iraq were damning:

The Intelligence Community’s performance in assessing Iraq’s pre-war WMD programs was a major intelligence failure. The failure was not merely that the Intelligence Community’s assessments were wrong. There were also serious shortcomings in the way these assessments were made and communicated to policymakers.⁵⁸⁸

In detailing the more precise problems the report cited two key flaws in the analysis, (1) “analysts skewed the analytical process by requiring proof that Iraq did not have WMD,”⁵⁸⁹ and (2) analysts did not question the hypotheses underlying their conclusions, and tended to discount evidence that cut against those hypotheses.⁵⁹⁰

In telling comments regarding the The President’s Daily Brief (PDB), which have never remained highly classified and not reviewed, the commission hypothesized that they “likely conveyed a greater sense of certainty about analytic judgments than warranted.”⁵⁹¹

H. THE DIFFICULTY WITH WMD INTELLIGENCE

In the area of proliferation in particular, such a failure to see beyond the Intelligence Community’s borders—and a failure to acknowledge what intelligence can and cannot do—has deprived the country of anti-proliferation levers that it badly needs.⁵⁹²

Intelligence is often best understood in hindsight, which means that gathering an accurate picture and accurately predicting threats related to WMD, particularly further complicates the intelligence and policy pictures.

First, increased global trade flows mean a significantly larger volume of global transactions and actions for intelligence agencies and export controllers to scrutinize. For

⁵⁸⁸ *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, Report to the President of the United States*, March 31, 2005, Chapter 1: Iraq Appendix Part 1: Looking Back Iraq Findings.

⁵⁸⁹ *Ibid.*, 561.

⁵⁹⁰ *Ibid.*, 562.

⁵⁹¹ *Ibid.*, 564.

⁵⁹² *Ibid.*, 529.

intelligence, it means an increasing number of people, in an increasing number of facilities, with access to the capabilities necessary to make WMD weapons. It also means many more transportation and business transactions, which increases the “background” noise and makes it much more difficult to separate the “signal” from the “static” in the background,⁵⁹³ which makes analysis difficult.

Indeed, the proliferation network of A.Q. Khan was able to exploit the gaps in the control system and operate throughout several different countries, which demonstrates the difficulties in being able to use intelligence to gauge intent and illicit activity. Intelligence estimates vary on how much was known of this threat. During most of the 1990s, Western Intelligence agencies had lost track of Khan and his activities.⁵⁹⁴ Questions remain about whether all the participants and workshops involved were identified and the full extent of their activities in manufacturing and supplying centrifuges known. Most disturbingly, it is possible that components for uranium enrichment plants have been produced but were not delivered to Libya; perhaps they were sent to other customers.⁵⁹⁵

However, the biggest gap in the intelligence may have been the assessment of just how big of a proliferation player Khan and his network were. The notion of Khan as an actor within a national program (Pakistan) was the dominant mindset during this the 1990s. “I think a lot a lot of people knew he was a player in the larger field of proliferation as well as in Pakistan but I don’t think they knew the extent until it was later revealed.”⁵⁹⁶ The idea of an individual transcending this role to become an independent international salesman was not yet appreciated. This analytic mindset that focused on

⁵⁹³ *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, Report to the President of the United States*; Russell and Clary, *Globalization and WMD Proliferation Networks: Challenges to U.S. Security*, 10.

⁵⁹⁴ Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*, 129.

⁵⁹⁵ Albright and Hinderstein, “Unraveling the A.Q. Khan and Future Proliferation Networks,” 118.

⁵⁹⁶ Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*, 130; Richard Kerr, Deputy Director of Intelligence, in discussion with the author at the CIA, October 21, 2005.

Khan as primarily a state actor and customer, rather than a salesman, led to some missed signals in the mid-to late 90s.⁵⁹⁷

“What we didn’t realize was that AQ K was running a global corporation which transcended the national boundaries.⁵⁹⁸ This analytic frame of mind that Khan was a state player and customer rather than a salesman capable of acting independently as a criminal corporate enterprise may have distracted intelligence community from seeing signals that would have told them otherwise.

For Iraq, the size and the complexity of the effort created a high “noise-to-signal” ratio, in which a tremendous amount of data for analysts existed, but who had difficulty sorting the useful from the irrelevant. Further, looking at the procurement effort—in many ways, the most visible aspect of a WMD program—has its limitations. Also, the difficulty in analysis of such technical information also plays a role. The Iraqi Post War Assessment document concluded, “A series of failures, particularly in analytic tradecraft, let to the mischaracterization of intelligence.”⁵⁹⁹

Ambassador Ronald Lehman of Lawrence Livermore National Laboratories discussed the challenges of such latency.⁶⁰⁰ He noted, “having such WMD potential complicates intelligence and policy since intelligence is forced to gauge intention, which is far more complicated than capability.”⁶⁰¹ Procurement activity must still be converted into technological capability. Even if the Iraqi procurement effort was advancing after 1999, it apparently had not translated into increased capabilities on the ground.⁶⁰²

⁵⁹⁷ Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network*, 130; Kerr, Deputy Director of Intelligence.

⁵⁹⁸ Ibid.

⁵⁹⁹ *Report on the U.S. Intelligence Prewar Intelligence Assessments on Iraq*, Senate Select Committee on Intelligence, Senate Report, July 7, 2004, 14.

⁶⁰⁰ Latency is when states possess the have the unexercised potential to develop WMD.

⁶⁰¹ Ambassador Ronald Lehman comments at *Conference Presentation Globalization and WMD Proliferation Networks: Challenges to U.S. Security*. Sponsored by the Advanced Systems Concepts Office of the Defense Threat Reduction Agency, presentation at Naval Postgraduate School, Monterey, CA, June 30, 2005.

⁶⁰² *Postwar Findings About Iraq’s WMD Programs and Links to Terrorism and How They Compare with Prewar Assessments” Senate Report of the Select Committee on intelligence*, 11.

Concerns were further exasperated in November 2007 by creating even more questions of American credibility with the release of the NIE on Iran's nuclear program. The NIE contradicted key judgments from its May 2005 assessment, and incorrectly assessed Iran's intent and capabilities and downplayed the threat posed by Iran's nuclear weapon program.⁶⁰³ In addition, it may have exposed the intelligence community's gap in knowledge about WMD program indicators. Most indicators focus on the nuclear fuel cycle and the stages of manufacturing a nuclear weapon, such as obtaining SME, and the weaponization of materials.⁶⁰⁴ Nuclear above ground tests are also an indicator, but by then, a program is much more advanced. Although most indicators of weaponization are ambiguous, some equipment or information can be considered a "smoking gun."⁶⁰⁵

Indications of a chemical or biological program may be even hazier and may have "few or no obvious external indicators."⁶⁰⁶ Biological and chemical agents may have more legitimate uses and possession may not automatically indicate intention of a weapons program. Less regulation and no overarching enforcement mechanism, such as the IAEA, which requires international inspections,⁶⁰⁷ exist in the international community.

In the midst of all the threat estimates and warning of potential for WMD terrorism and dangerous proliferation activities, Iraq serves as a great warning to policy makers. Despite the real threat that does exist is the chance that such threats may be exaggerated for intentional reasons, or because the analysis is based upon faulty logic, or incorrect technical information.

One research attributes these intelligence failings in overestimates on a tendency toward "confirmation bias." This confirmation bias serves to solidify with

⁶⁰³ Reiss, "Foreword" in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, xii.

⁶⁰⁴ "John Hart and Vitaly Fedchenko, "Combating Weapons of Mass Destruction," in *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy*, ed. Nathan E. Busch and Daniel H. Joyner (Athens, GA: University of Georgia Press, 2009), 96–97.

⁶⁰⁵ Ibid., 96.

⁶⁰⁶ Ibid., 97–98.

⁶⁰⁷ Dr. Rocco Casagrande, Managing Director of Gryphon Scientific, LLC, and former UN Biological weapons inspector in Iraq, in discussion with author. Date: June 15, 2011.

overconfidence and inflation of what people already “think” they may know.⁶⁰⁸ This confirmation bias plays heavily in the traditional non-proliferation regime based in Cold War thinking. His point is not to deny that knowledge informs policy but to demonstrate that “certainty prevents imagination and creativity in politics and surely prevents any kind of shift from hope to audacity.”⁶⁰⁹

I. CONCLUSION

Entrepreneurs are simply those who understand that there is little difference between obstacle and opportunity and are able to turn both to their advantage.

—Niccolo Machiavelli

WMD terrorism is a growing threat fueled by broader trends of the 21st century, including emerging patterns in extremism and globalization in an increasingly complex environment. The increasing convergence of issues of terrorism, proliferation, and WMD issues, highlighted in this chapter are fueling the odds of WMD terrorism occurring and making it increasing difficult to detect the threats.

The criminal networks of transnational terrorists and complicated proliferation networks faced today are a very different enemy that what was faced just over a decade ago. The complex world in which they thrive is also very different. These groups are both a “product” and “beneficiary” of globalization. If policymakers and intelligence want to be able to interdict and stop the behavior, it must be necessary to exploit the same opportunities criminal networks and non-state actors have been able to exploit. It is crucial to think differently about the threats facing today’s world.

⁶⁰⁸ Pelopidas, “The Oracles of Proliferation: How Experts Maintain a Biased Historical Reading That Limits Policy Innovation,” 310.

⁶⁰⁹ Ibid.

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V. IMPLICATIONS FOR PREVENTION AND RESPONSE TO THREAT: THE HISTORY UNDER NON-PROLIFERATION POLICY

This thesis analyzes the shift in nonproliferation and counter-proliferation regimes from multilateral treaty regimes (adhering predominately to traditional notions of sovereignty and state consent) to the more recent mechanisms, namely, the Proliferation Security Initiative and Resolution 1540. While acknowledging the weaknesses of the multilateral treaty regime previously used, this thesis questions whether the current mechanisms are adequate to address WMD threats since 9/11.

A. APPROACHES TO COUNTERPROLIFERATION VS. COUNTERTERRORISM

Global treaties and institutions are supported by export controls, national laws and regulations, economic and security assurances, sanctions, and regional arrangements of various types including nuclear free zones⁶¹⁰ that are the foundation upon which the “classic” non-proliferation regime is built. On the other hand, counterterrorism programs have some basis in international law and norms, but since 9/11, a greater focus has been on national domestic efforts and law enforcement (i.e., interdiction) operations. The United States has adopted this approach while developing “homeland security” as a separate and distinct bureaucratic organization and discipline from national security or foreign policy. Nowhere are the differences between U.S. systems and others more apparent than in looking at this nation’s approaches to WMD policy.

According to Paul Stockton, “Homeland security fundamentally differs from national security in that states and localities play the leading role in many homeland security missions, as opposed to federal agencies.”⁶¹¹ However, the non-proliferation

⁶¹⁰ Pilat, “Dealing with Proliferation and Terrorism Involving WMD,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 15.

⁶¹¹ Paul N. Stockton, “Beyond the HSC/NSC Merger: Integrating States and Localities into Homeland Security Policymaking,” *Homeland Security Affairs* V, no. 1 (January 2009).

regime has traditionally only been defined in the sphere of international policy. The issue becomes how to frame the issues, which now encompass both national and international efforts, guidelines and programs.

Counterterrorism and counterproliferation both address WMD issues from differing perspectives.⁶¹² The counterproliferation community largely focuses on nation-states and the means of producing WMD materials and technology with long-term policy incentives, while the counterterrorism community focuses more on intelligence targeting of groups that may be seeking WMD material and technology. Both efforts are led by different agencies and have different funding streams.⁶¹³ The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction concluded that the U.S. government has yet to successfully define the roles, missions, authorities, and the means of sharing information among this country's national and homeland security organs including poorly coordinated information flow between the federal, state, local, and tribal level.⁶¹⁴

To attempt better coordination of terrorist threats and intelligence, several new bureaucratic organizations were created post 9/11. Those pertaining to intelligence is the National Counterterrorism Center (NCTC), which serves as the primary organization in the U.S. government for analyzing and integrating all intelligence pertaining to terrorism and counterterrorism, (except that intelligence that pertains exclusively to domestic terrorists and domestic counterterrorism).⁶¹⁵ Noteworthy is that the NCTC is also responsible for conducting strategic operational planning for counterterrorism activities, integrating all instruments of national power, including diplomatic, financial, military,

⁶¹² Albert Mauroni, "Homeland Insecurity: Thinking About CBRN Terrorism," *Homeland Security Affairs* VI, no. 3 (September 2010).

⁶¹³ Ibid.

⁶¹⁴ *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, Report to the President of the United States*, 279. (aka Robb-Silberman Report) Known as the Robb-Silberman Report. The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction was established in 2004 and charged with examining the capabilities and challenges of the American intelligence community concerning the capabilities, intentions, and activities of foreign powers relating to the design, development, manufacture, acquisition, possession, proliferation, transfer, testing, potential or threatened use, or use of WMD, related means of delivery, and other related threats of the 21st century.

⁶¹⁵ Ibid., 586.

intelligence, homeland security, and law enforcement activities within and among agencies.⁶¹⁶ The NCTC is legally based per DNI directive and is based upon the implementation of a key recommendation of the Commission on the Intelligence Capabilities of the United States regarding the establishment of a national clearinghouse to manage and coordinate analysis and collection on nuclear, biological, and chemical weapons across the Intelligence Community.⁶¹⁷

The Intelligence Reform and Terrorism Prevention Act of 2004 established the position of the Director of National Intelligence (DNI) to serve as the head of the intelligence community and act as the principal adviser to the President on intelligence matters related to national security. The creation of the DNI separates the responsibilities of leading the intelligence community from heading the CIA, which had been combined in the position of Director of Central Intelligence (DCI) previously. As discussed in this report, the legislation gives the DNI new authorities and responsibilities that the DCI did not possess under prior law.⁶¹⁸

The National Counter Proliferation Center (NCPS) works with the Intelligence Community “to identify critical holes in our WMD knowledge—resulting from shortfalls in collection, analysis or exploitation - and then develop solutions to reduce or close these gaps.”⁶¹⁹ It continues to define its mission as to help “identify long-term proliferation threats and requirements, and develops strategies to ensure that the Intelligence Community is positioned to address these over-the-horizon threats.”⁶²⁰

These new bureaucratic creations are intended to enhance coordination among agencies (in this case, primarily intelligence agencies) but it is not difficult to see that even in a post-Sept 11 environment that agencies are having difficulty aligning and

⁶¹⁶ *Hearing before the Permanent Select Committee on Intelligence U.S. House of Representatives, Testimony of the Honorable Matthew G. Olsen Director National Counterterrorism Center*, October 6, 2011, 8.

⁶¹⁷ *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, Report to the President of the United States*, 567.

⁶¹⁸ *Ibid.*, 585.

⁶¹⁹ National Counterproliferation (NCPC), “Home,” (n.d.), <http://www.counterwmd.gov>.

⁶²⁰ *Ibid.*

establishing lines of authority under the new threat. Especially since the roles and responsibilities of agencies, such as the Department of Homeland Security and the Federal Bureau of Investigation have similar, yet distinct, goals, missions, and lines of authority. The distinction between counterintelligence and counterterrorism is subtle but important. Too often, these programs are in stovepipes that hinder effective lateral cooperation and/or insight.

A second distinction is that which lies between domestic and international efforts.

On the domestic side, counterterrorism efforts have largely focused on “CBRNE preparedness”—that is preparing first responders to deal with chemical, biological, radiological, nuclear and explosives,” from a “boots on the ground” perspective. For instance, Defense Secretary William Cohen’s intense interest in consequence management led to the concept of National Guard WMD civil support teams to assist state and local emergency responders *after* a WMD incident occurs.⁶²¹ Whereas international efforts tend to take on issues of diplomacy, its enforcement efforts often fall within the realm of sanctions, including those placed on North Korea and Iran for the development of nuclear capabilities. Interdiction and detection efforts of potential threats within national borders are relatively new efforts without established frameworks. Conversely, securing efforts at either end makes work in the middle easier to enhance efforts. How “WMD” is addressed in a domestic setting is different from how “WMD” is addressed on a battlefield. The key is how to integrate the response to that threat within the context of homeland defense/civil support and major combat operations.

B. INTERNATIONAL MECHANISMS

The IAEA defines “nuclear security” as the prevention and detection of (and response to) theft, sabotage, unauthorized access, and illegal transfer of or other malicious acts involving nuclear materials and other radioactive substances.⁶²² Originally, the meaning of this term was directed towards efforts to stem the tide of

⁶²¹ American Forces Press Service, “Cohen Vows to Combat Terrorism,” September 30, 1998, <http://www.defense.gov/news/newsarticle.aspx?id=41818>.

⁶²² IAEA, “Concepts and Terms,” (n.d.), <http://www-ns.iaea.org/standards/concepts-terms.asp>.

nuclear weapons escalation ending in a nuclear war between states. However, over time, the term has evolved to be more closely associated with the efforts to mitigate the risks of nuclear terrorism.

In international diplomacy, the United States and other countries have worked to develop and strengthen a host of multilateral arrangements, including the Proliferation Security Initiative, U.N. Security Council Resolution 1540, the Global Threat Reduction Initiative, the International Convention for the Suppression of Acts of Nuclear Terrorism, amending the U.N. Convention on the Physical Protection of Nuclear Material, the International Atomic Energy Agency (IAEA) Nuclear Safety Program, the IAEA Committee on Safeguards and Verification, and most recently, the Global Initiative to Combat Nuclear Terrorism. These programs and others are designed to provide a multi-layered “defense in depth” against nuclear terrorism.⁶²³

Member states adopted the United Nations Global Counter-Terrorism Strategy in September 2006. The strategy, in the form of a resolution and an annexed Plan of Action,⁶²⁴ is a unique global instrument that will enhance national, regional and international efforts to counter terrorism. For the first time, all member states have agreed to a common strategic approach to fight terrorism, not only sending a clear message that terrorism is unacceptable in all its forms and manifestation, but also resolving to take practical steps individually and collectively to prevent and combat it. Those practical steps include a wide array of measures ranging from strengthening state capacity to counter terrorist threats to better coordinating the United Nations’ systems for counterterrorism activities. The adoption of the strategy fulfils the commitment made by world leaders at the 2005 September Summit and builds on many of the elements proposed by the Secretary-General in his May 2006 report.⁶²⁵ In fact, building state

⁶²³ See *Weapons of Mass Destruction: Reviving Disarmament: Hearing Before the Subcommittee. on National Security, Emerging Threats, and International Relations of the House, Government Reform Committee, 109th Congress. 6-8 (2006)* (statement of William Tobey, Deputy Admiral for Defense Nuclear Nonproliferation, Nat’l Nuclear Sec. Admin., U.S. Department of Energy).

⁶²⁴ United Nations Resolution, Global Counter-Terrorism Strategy, A/RES/60/288, September 8, 2006.

⁶²⁵ *Uniting against Terrorism: Recommendations for a Global Counter-Terrorism Strategy*, Kofi Annan, United Nations, May 2, 2006.

capacities to address this threat is a goal of the United Nations. Law enforcement and intelligence communities within and across states are collaborating to address issues, such as the terrorist use of chemical, biological, radiological, or nuclear (CBRN) materials, misuse of the Internet for terrorist purposes; improvement of border security, the detection and confiscation of forged travel documents, and the protection of the most vulnerable targets have all become new strategies.⁶²⁶

Since 1963, the international community has elaborated 14 universal legal instruments and four amendments to prevent terrorist acts.⁶²⁷ Those instruments were developed under the auspices of the United Nations and its specialized agencies and the International Atomic Energy Agency (IAEA), and are open to participation by all member states. Of note is the 2005 International Convention for the Suppression of Acts of Nuclear Terrorism—or Nuclear Terrorism Convention, as it is more widely known.

Adopted in 2005, the Nuclear Terrorism Convention was adopted under the auspices of the United Nations. It details offenses relating to unlawful possession and use of radioactive materials, and the use or damage of nuclear facilities.⁶²⁸ The convention requires parties to criminalize these offenses and to protect nuclear and radiological materials physically as recommended by the IAEA. In addition to these obligations, the convention is significant because it requires states to cooperate with one another and with the IAEA in their efforts to prevent, detect, and respond to nuclear and radiological terrorism threats.⁶²⁹ The convention thus plays an important role in establishing nuclear security as an international norm and in legitimizing UN and IAEA authority in shaping and overseeing the nuclear security regime. The adoption and activation of this long-awaited (and highly contested) instrument signaled a turning point in the evolution of the global nuclear security regime. However, the Nuclear Terrorism Convention is not

⁶²⁶ *Implementation of the UN Global Counterterrorism Strategy*, Paper prepared by the Stanley Foundation for the 42nd Conference on the United Nations of the Next Decade, June 2007.

⁶²⁷ United Nations, “United Nations Action to Counter Terrorism, International Legal Instruments,” (n.d.), <http://www.un.org/en/terrorism/instruments.shtml>.

⁶²⁸ *2005 International Convention for the Suppression of Acts of Nuclear Terrorism (Nuclear Terrorism Convention)*, 2005.

⁶²⁹ *Ibid.*

without its problems. Nearly five years have passed since the convention was adopted, and three years since it entered into force; yet, it has only 65 parties. Important states that have not signed include Indonesia, Iran, Iraq, Myanmar, North Korea, Pakistan, and Vietnam. Moreover, of the nuclear weapon states, only China, India, Russia, and the United Kingdom have currently ratified it.⁶³⁰

Global Partnership projects were initially conducted in Russia and Ukraine, and focused on destroying chemical weapons, dismantling nuclear submarines, disposing of nuclear weapons-usable material, and employing scientists who had worked on nonconventional weapons. The G-8 agreed in 2008 to expand the initiative's activities worldwide and has increasingly engaged in threat reduction efforts beyond the four priority areas.⁶³¹ Highlighting some of the changes in the nature of Global Partnership efforts since 2002, a State Department official stated, "now we're in a new CTR environment that's not as clear-cut as before," and added that "we need time to figure out where the threats are, what the priorities are, and what to fund first." The official said that the new CTR environment involved not only the expansion of activities outside the former Soviet Union, but also new efforts, such as biosecurity, radiological security, and export controls.⁶³²

Another significant accomplishment occurred in July 2006 when the United States and Russia launched the Global Initiative to Combat Nuclear Terrorism to establish an international framework to enhance cooperation, build capacity, and act to combat the global threat of nuclear terrorism.⁶³³ This initiative is intended to help drive international focus and action to ensure the international community is doing everything possible to prevent nuclear weapons, materials, and knowledge from reaching the hands of terrorists.

⁶³⁰ United Nations, "International Convention for the Suppression of Acts of Nuclear Terrorism Database," New York, April 2005, http://treaties.un.org/Pages/ViewDetailsIII.aspx?&src=TREATY&mtdsg_no=XVIII~15&chapter=18&Temp=mtdsg3&lang=en, 13.

⁶³¹ Levi, *On Nuclear Terrorism*, 16.

⁶³² Peter Crail, "G-8 Extends WMD Initiative," *Arms Control Today*, June 2011, <http://www.armscontrol.org/print/4907>.

⁶³³ U.S. Department of States, "The Global Initiative to Combat Nuclear Terrorism," (n.d.), <http://www.state.gov/t/isn/c18406.htm>.

By coordinating international efforts to detect, investigate, and respond to proliferation by non-state actors.

C. COOPERATIVE THREAT REDUCTION PROGRAMS

Collaborative threat reduction programs, which work collaboratively to secure weapons, material, and expertise, —are the areas in which the United States and others in the global community have focused most their efforts. The Nunn Lugar and G-8 efforts worked to reduce stockpiles significantly in the former Soviet Union states and then began to expand to others. Many experts characterize programs that secure materials at their source, including, most prominently, cooperative threat reduction, as “the most powerful tool available,” in nonproliferation.⁶³⁴

In 1991, Congress authorized the DoD to establish the Cooperative Threat Reduction (CTR) program—the initial program of nuclear security assistance to Russia and the former Soviet states and the origin of some of the NNSA programs—to help Russia, Ukraine, Belarus, and Kazakhstan secure and protect former Soviet nuclear weapons.⁶³⁵ In 1991, Congress passed the Soviet Nuclear Threat Reduction Act of 1991, popularly referred to as the “Nunn-Lugar Act Cooperative Threat Reduction Act” authorizing U.S. threat reduction assistance to the former Soviet Union, because of concerns about the safety and security of Soviet nuclear weapons. The law’s objective was to “Facilitate, on a priority basis, the transportation, storage, safeguarding, and elimination of nuclear and other weapons of the independent states of the former Soviet Union.”⁶³⁶ The legislation authorized funding to assist the former Soviet Union with its efforts to (1) destroy nuclear, chemical, and other weapons, (2) transport, store, disable, and safeguard weapons in connection with their destruction, and (3) establish verifiable safeguards against the proliferation of such weapons. By doing so, the United States

⁶³⁴ *Prepared statement of Michael A. Levi, Fellow for Science and Technology, Council on Foreign Relations Before the Committee on the Judiciary Subcommittee on Terrorism, Technology, and Homeland Security United States Senate*, July 27, 2006.

⁶³⁵ Cornell University Law School, “U.S. Code: Title 22, Foreign Relations and Intercourse, Chapter 68a, Cooperative Threat Reduction with States of Former Soviet Union, Section 5951, Findings on Cooperative Threat Reduction,” (n.d.), http://www.law.cornell.edu/uscode/22/usc_sec_22_00005951----000-.html.

⁶³⁶ *Ibid.*

initiated preventive steps to halt the proliferation of nuclear material, chemical, and biological agents out of the former Soviet Union before it began by securing materials at their source.

With demonstrated effectiveness, the Nunn-Lugar program has successfully reduced the number of stockpiles and “loose nukes” in the former Soviet Union. The U.S.-led PSI is often considered the prototype for a new, less universal, but more flexible and efficient nonproliferation strategy. However, by looking at terrorism as a possible outcome, it may be necessary to move some of that focus on smaller quantities and scientists. CTR can lessen opportunities and stop threat at the source. Yet, despite these proven successes, some experts believe that these collaborative efforts have not been afforded the financial resources or political support they warrant.”⁶³⁷

In recent years, NNSA nuclear nonproliferation programs have focused increasing attention on the security of weapon-usable nuclear materials in countries beyond Russia and the former Soviet states. For example, the Global Threat Reduction Initiative (GTRI) was created in 2004 to consolidate and accelerate NNSA efforts to secure and recover nuclear and radiological materials overseas and convert HEU-fueled research reactors in dozens of countries around the world. In fiscal year 2009, NNSA spent over \$2 billion on its nuclear nonproliferation programs.⁶³⁸ The NNSA programs have engaged more than 100 countries, and are seeking to increase nuclear security work with several countries where limited prior cooperation has occurred. However, the GAO found progress on some programs to improve nuclear security, including those in China and India, have had mixed outcomes of success due largely to “political sensitivities.”⁶³⁹

⁶³⁷ Finlay and Turpen, *25 Steps to Prevent Nuclear Terror: A Guide for Policy Makers*, 86.

⁶³⁸ U.S. Government Accountability Office, *Nuclear Nonproliferation: Comprehensive U.S. Planning and Better Foreign Cooperation Needed to Secure Vulnerable Nuclear Materials Worldwide*, “Report to the Chairman and Ranking Member, Subcommittee on Energy and Water Development, Committee on Appropriations, House of Representatives, (GAO-11-227), Washington, DC: GPO, December 2010, 3.

⁶³⁹ *Ibid.*, ii, 25–28.

D. DECONFLICT: EVOLVING WMD STRATEGIES THROUGH THE LENS OF NATIONAL STRATEGIES

The U.S. approach to nuclear threats has been evolving since the 1940s when nuclear capabilities were first introduced. However, following 9/11, the international community changed how it viewed WMD threats. In the wake of the terrorist attacks on September 11, 2001, seven new national strategies were developed and published to help guide U.S. efforts to combat terrorism. Of these, five were newly published strategies that related to specific aspects of homeland security and combating terrorism, such as WMD.⁶⁴⁰

Since nuclear proliferation was identified in 1992 by the United Nations Security Council as a threat to international peace and security, the most reliable and consistent policy for achieving nonproliferation has been to prevent actors from acquiring the means to build a bomb by erecting technical barriers to that process.⁶⁴¹ Chemical, biological, and missile proliferation did not attain the priority of nuclear proliferation until the 1980s.⁶⁴² Chemical and biological threats have been dealt with mostly through international protocols and regulative measures.

As times have changed, and programs continue to develop, that preventative posture may not be enough to make the United States safe from these threats. State actors, acting outside of the regime, such as Iran, Iraq,⁶⁴³ and North Korea, have all managed to develop programs of varying degree.

In 1995, the first domestic policy announced links between nuclear, chemical, and biological weapons threats, and terrorists.⁶⁴⁴ Following 9/11, the 2002 National Strategy

⁶⁴⁰ U.S. Government Accountability Office, *Combating Terrorism: Evaluation of Selected Characteristics in National Strategies Related to Terrorist*, (GAO-04-408T), Washington, DC: GPO, February 3, 2004.

⁶⁴¹ United Nations, "Note by the President of the Security Council," S/23500, January 31, 1992, http://www.francetnp.fr/IMG/pdf/Declaration_CSNU_1992.pdf.

⁶⁴² Pilat, "Dealing with Proliferation and Terrorism Involving WMD," in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 15.

⁶⁴³ Although they did abandon them, and no signs of an active program were present during the 2003 invasion, no one is disputing that Iraq had developed some capability.

⁶⁴⁴ Office of Justice Programs, "Presidential Decision Directive 39, U.S. Policy on Counterterrorism," June 21, 1995, <http://www.ojp.usdoj.gov/odp/docs/pdd39.htm>.

to Combat Terrorism officially designated “non-state actors” as a security threat.⁶⁴⁵ The 2002 National Security Strategy to Combat Weapons of Mass Destruction contained similarly direct language:

The gravest danger our Nation faces, lies at the crossroads of radicalism and technology. Our enemies have openly declared that they are seeking weapons of mass destruction, and evidence indicates that they are doing so with determination. The United States will not allow these efforts to succeed.⁶⁴⁶

After 9/11, the United States set out its strategy to specifically combat WMD. The strategy is comprised of three pillars: nonproliferation, counterproliferation, and consequence management.⁶⁴⁷ (The 9/11 Commission offers one recommendation in this domain that essentially urges enhancing three existing programs—counterproliferation efforts, expanding PSI and CTR—with greater emphasis).⁶⁴⁸ The strategy defines counterproliferation activities as those that combat the use of WMD, such as interdiction, deterrence, defense, and mitigation. Non-proliferation efforts are those aimed at preventing the spread of those weapons to limit the production and transfer of materials used in the production of WMD.⁶⁴⁹ These non-proliferation efforts include such diverse approaches as diplomacy, arms control, multilateral regimes, threat reduction, cooperation, controls on nuclear materials, sanctions, and export controls as the first actions the United States can take to build international support for the elimination of the

⁶⁴⁵ *National Strategy for Homeland Security* (Washington, DC: U.S. Government Printing Office, 2002).

⁶⁴⁶ President George Bush, *2002 National Security Strategy to Combat Weapons of Mass Destruction, NSPD-17/HSPD 4*, September 17, 2002.

⁶⁴⁷ U.S. Department of State, “National Strategy to Combat Weapons of Mass Destruction,” December 2002, <http://www.state.gov/documents/organization/16092.pdf>.

⁶⁴⁸ *9/11 Commission Report*, 380–381.

⁶⁴⁹ 2007 National Strategy for Homeland Security, White House, President Bush, October 2007.

threat.⁶⁵⁰ It is of interest to point out that the document narrows the WMD threat to being a component of a terrorist attack and not as a potential threat posed by a rogue nation.⁶⁵¹

Then, in December 2002, in the midst of post-9/11 bureaucratic realignment, President Bush announced a national strategic policy on WMD to complement the 2002 National Strategy. In this document, the 2002 Strategy to Combat Weapons of Mass Destruction, the President went further in specific efforts to combat WMD including calling for the application of new technologies, increasing emphasis on intelligence collection and analysis, strengthening relationships with alliances, and the establishing new partnerships with former adversaries.⁶⁵² The main pillars of the President's program included interdiction efforts, nonproliferation programs, and consequence management.⁶⁵³

We will not permit the world's most dangerous regimes and terrorists to threaten us with the world's most destructive weapons. We must accord the highest priority to the protection of the United States, our forces, and our friends and allies from the existing and growing WMD threat.⁶⁵⁴

In particular, President Bush called for an emphasis on improving intelligence regarding WMD facilities and activities, expanding the interaction among U.S. intelligence, law enforcement, and military agencies, and enhancing intelligence cooperation with friends and allies.⁶⁵⁵ Also of note, was that the comprehensive approach relied heavily on both

⁶⁵⁰ A similar definition is provided in Al Mauroni's article in which he defines the two as "Nonproliferation activities include those treaties and agreements developed to prevent proliferation of WMD by dissuading or impeding access to, or distribution of, sensitive technologies, material, and expertise. These activities are led by the State Department. Counterproliferation refers to active and passive measures designed to defeat the adversarial threat or use of WMD against U.S. military forces." Mauroni, "A Counter WMD Strategy for the Future," 71.

⁶⁵¹ George W. Bush, *National Strategy for Homeland Security* (Washington, DC: White House, October 2007), 15, 30–39.

⁶⁵² 2002 WMD Strategy.

⁶⁵³ Ibid.

⁶⁵⁴ George W. Bush, *National Strategy to Combat Weapons of Mass Destruction* (Washington, DC: White House, December 2002).

⁶⁵⁵ Ibid., 20.

diplomacy and military strength,⁶⁵⁶ which signaled one of the earliest recognitions that both these efforts were needed to support operational efforts.

The National Strategy for Combating WMD Terrorism was intended to “bring together in a comprehensive way our traditional counter-proliferation, nonproliferation, and counterterrorism tools to confront and defeat this grave threat to international peace and security.”⁶⁵⁷ The strategy was an attempt to provide the President’s vision on how the entirety of the federal government should address this catastrophic threat to the nation. Under this strategy, the Departments of State, Defense, and Homeland Security have the primary roles in executing this strategy; it does not alleviate the other departments from also taking actions to combat this threat.⁶⁵⁸ However, clearly defined roles of each agency, or how the nonproliferation community and counterterrorism community would work together to coordinate have not been identified. These gaps raise the issues, of whether anyone is coordinating actions and efforts, or orchestrating a grand strategy to maximize effects.

The second major component of nonproliferation, security cooperation, and building partner capacity, focuses on assisting U.S. allies and friends in being self-sufficient in their own protection. By the simple nature of treaties and economic sanctions, these actions primarily focus on state entities and consequence management, which guide the planning and response to a WMD event,⁶⁵⁹ which also serves as a deterrent by demonstrating the U.S.’ capabilities to respond to the use of chemical, biological, radiological, or nuclear weapons. If the United States is successful in controlling access to critical technology and demonstrating an overwhelming ability to respond, most nations should be kept from even attempting to acquire or develop WMD capabilities.

⁶⁵⁶ Bush, *National Strategy to Combat Weapons of Mass Destruction*, 20.

⁶⁵⁷ U.S. Department of State, “Our National Strategy,” (n.d.), <http://www.state.gov/t/isn/c19738.htm>, as sourced from White House, “National Security Council,” (n.d.), <http://www.whitehouse.gov/nsc/nsct/2006/>.

⁶⁵⁸ 2002 WMD Strategy.

⁶⁵⁹ Colonel Patrick R. Terrell, *Updating Our Strategy for Combating Weapons of Mass Destruction*, U.S. Army War College, Strategy Research Project, January 3, 2009, 2–3.

While it may be easy to see the second pillar, counterproliferation, as the next logical step after nonproliferation fails, it is in fact a step that must happen in concurrence with nonproliferation. Unfortunately, chemical, biological, radiological, and nuclear (CBRN) weapons already exist around the world and require actions today through means other than treaties. The United States is capable of countering ongoing proliferation by maintaining the ability to interdict shipments of WMD-related material and by providing a credible deterrent.⁶⁶⁰

By comparison to the 2002 Strategy, the 2007 National Strategy additionally specifies the importance of preventing and disrupting terrorist attacks using WMDs, protecting the American people, critical infrastructure, and key resources, and notably, includes response to and recovery from such incidents.⁶⁶¹ The most significant policy shift in this document narrows the WMD threat to being a component of a terrorist attack and not as a potential threat posed by a rogue nation.⁶⁶²

In February 2010, the Quadrennial Defense Review stressed how the proliferation of WMD “continues to undermine global security.”⁶⁶³ During talks related to these initiatives, President Barack Obama directly connected the threat of nuclear terrorism to the success of nuclear proliferation efforts.⁶⁶⁴

From a U.S. perspective, proliferation has been seen from the beginning as a global problem. Responses to the threat in the nuclear realm have been primarily global in nature, including the Atoms for Peace initiative, a modest proposal that traded access to civil nuclear technology for restraints on military applications, the creation of the IAEA (as envisioned in the Atoms for Peace proposal) and the NPT.⁶⁶⁵ In the late 1990s, the United States embarked on the Nunn-Lugar project, a bilateral agreement on threat

⁶⁶⁰ Terrell, *Updating Our Strategy for Combating Weapons of Mass Destruction*, 2–3.

⁶⁶¹ 2007 National Strategy.

⁶⁶² Ibid.

⁶⁶³ 2010 Quadrennial Review.

⁶⁶⁴ Mauroni, “A Counter WMD Strategy is for the Future,” 71, 58.

⁶⁶⁵ Pilat, “Dealing with Proliferation and Terrorism Involving WMD,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 15.

reduction that worked to secure stockpiles of nuclear material in Russia. The project is credited with at least moderate success in reducing the about “loose nukes” and lose material in Russia under crumbling infrastructure. Biological and chemical weapons proliferation did not attain the priority of nuclear proliferation until the late 1980s following the first Gulf War and the Iraq chemical weapons use on Iran and its own Kurdish population.⁶⁶⁶ This situation was also dealt with by an international response focusing on international treaties, which led to the negotiation and conclusion of the Chemical Weapons Convention, (CWC) a growing attention on verification of the Biological Weapons Convention (BWC), and the creation of supplier regimes, primarily the Australia Group and the Missile Technology Control Regime (MTCR).⁶⁶⁷ Until the 9/11, virtually no mention of terrorism appeared in the projects, and had little direct connection to domestic projects and actions—the “homeland security aspect.”

E. ANALYSIS OF CURRENT POLICIES/REVIEW OF NATIONAL EFFORTS

1. WMD Report Card

The Partnership for a Secure America (PSA) announced an initiative to monitor and evaluate the implementation of key unfulfilled recommendations of the 9/11 Commission related to WMD.⁶⁶⁸ One of the top priorities of this effort was to follow up on the Commission’s recommendation that the U.S. government apply maximum effort to preventing a WMD terror attack on the United States by combating the proliferation of weapons and materials around the world.⁶⁶⁹ In December 2008, in accordance with the Implementing Recommendations of the 9/11 Commission Act of 2007 (Public Law 110–53), the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism submitted its report, “World at Risk.” In 2009, the Commission was

⁶⁶⁶ Pilat, “Dealing with Proliferation and Terrorism Involving WMD,” in *Combating Weapons of Mass Destruction: The Future of Nonproliferation Policy*, 15.

⁶⁶⁷ Ibid., ch. 4 and 6.

⁶⁶⁸ Transcripts from Partnership for a Secure America Press conference, August 3, 2005, As published by FDCH Political Transcripts.

⁶⁶⁹ Partnership for a Secure America, *WMD Report Card: Evaluating U.S. Policies to Prevent Nuclear, Chemical, & Biological Terrorism Since 2005*, January 2010, 1.

authorized to work for an additional year to assist Congress and the Administration to improve its understanding of its findings and turn its concrete recommendations into actions. In accordance with that authorization, the Commission submitted a report card assessing the U.S. government's progress in protecting the United States from WMD proliferation and terrorism. Commonly known as the WMD Report Card, it assessed the progress that the U.S. government has made in implementing the recommendations of the 9/11 Commission. In September 2008, the Partnership for a Secure America released its bipartisan report of the U.S.' efforts to improve security from WMD attacks and gave the U.S. government an overall grade of "C." In their report, they identify three major shortfalls the government must address in regards to WMD prevention and preparedness: (1) no one overall is in charge of converting "resolve into results," (2) no strategic plan links disparate actions, and (3) a failure exists to build international support for these efforts.⁶⁷⁰

Its first report issued in 2008, "World at Risk," the Commission concluded in its final report that American national security faced ever growing threats from unconventional weapons, and from biological weapons in particular.⁶⁷¹ The report assigns 17 grades that highlight the issues of greatest priority in protecting Americans from WMD. While in general, the government was given praise for its efforts to reduce nuclear threats, it had harsher findings regarding biological threats. Specifically, the commission concluded that the last four Presidential administrations have "failed to pay consistent and urgent attention to increasing the nation's ability to respond quickly and effectively to a germ attack" that would inflict massive casualties on the nation.⁶⁷² Ultimately, the commission chairman and vice chairman stated, the "lack of

⁶⁷⁰ Partnership for a Secure America, *WMD Report Card: Evaluating U.S. Policies to Prevent Nuclear, Chemical, & Biological Terrorism Since 2005* (Washington, DC: Partnership for a Secure America, September 2008), 2. They further expound on these areas in three separate reports for chemical, biological, and nuclear threats.

⁶⁷¹ World at Risk, *The Report of the Commission on the Prevention of WMD Proliferation and Terrorism*, December 2, 2008.

⁶⁷² Ibid.

preparedness” and “consistent lack of action” reflect “a failure of the U.S. government to grasp the threat of biological weapons.”⁶⁷³

In a stark and now infamous warning, the Commission found that “unless the world community acts decisively and with great urgency, it is more likely than not that a weapon of mass destruction will be used in a terrorist attack somewhere in the world by the end of 2013.”⁶⁷⁴

2. Evaluation of Goals for President Obama’s Nuclear Strategy

A decade after events that changed the way the nexus between proliferation and WMD terrorism is viewed, the current policy landscape requires an examination of the interpretation and implementation of the policies established in the early days following 9/11, as well as how other nations are addressing this same global challenge. Unfortunately, it seems nonproliferation has seen only minor changes in the last decade.

While President Bush was the first to include terrorism on the national strategic agenda, President Obama first put nuclear non-proliferation the “centerpiece” of his national security agenda.⁶⁷⁵ In 2009, President Obama laid out an aggressive vision of nuclear security. While the most noted goal was a world without nuclear weapons, he tied that goal to preventing nuclear terrorism by securing vulnerable nuclear materials and strengthening international cooperation on nuclear issues.⁶⁷⁶

Most recently in June 2011, President Obama made a dramatic shift over the Bush Administration policies regarding terrorism strategy. In issuing the 2011 National Strategy on Counterterrorism, President Obama chose to use this document by focusing on one part of a larger national security strategy.

This Strategy builds upon the progress we have made in the decade since 9/11, in partnership with Congress, to build our counterterrorism and

⁶⁷³ World at Risk, *The Report of the Commission on the Prevention of WMD Proliferation and Terrorism*.

⁶⁷⁴ Ibid.

⁶⁷⁵ Thomas Donilon, National Security Advisor, *Transcript from Speech at the 2011 Carnegie International Nuclear Policy Conference*, Washington, DC, March 29, 2011.

⁶⁷⁶ White House, “Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic.”

homeland security capacity as a nation. It neither represents a wholesale overhaul—nor a wholesale retention—of previous policies and strategies.⁶⁷⁷

However, for the first time in defining the threat, the 2011 Strategy specifically targets one group—Al Qaeda—rather than a larger subset of groups, targets, and methodologies. The principal focus of this counterterrorism strategy is the network that poses the most direct and significant threat to the United States—al-Qaeda. According to the 2011 Counterterrorism Strategy, “the preeminent security threat to the United States continues to be from al-Qa’ida and its affiliates and its adherents.”⁶⁷⁸

The strategy does contain a brief mention in regards to the prevention and terrorist acquisition of WMD, which continues the justification, laid out by earlier strategies. In that brief statement, it lays out two significant facts: (1) that nuclear terrorism is the greatest threat to global security, and (2) that providing multilateral nonproliferation organizations with the resources, capabilities, and authorities they need to be effective. Deepening international cooperation and strengthening institutions and partnerships is one way to achieve to prevent WMD and nuclear materials from falling into the hands of terrorists.⁶⁷⁹

While the President has continued to highlight the dangers of nuclear terrorism in policy speeches, his efforts in nonproliferation are still largely tied to the START—a very “traditional concept” in nuclear missile defense. While the current administration is attempting to make diplomatic headway in the areas of chemical and nuclear proliferation, it took a very different approach with biological threats.

3. The Obama Administration and Biological Threats

Although new efforts to thwart chemical threats remain absent from the national agenda, President Obama released a National Strategy to Countering Biological Threats

⁶⁷⁷ The White House, Office of the Press Secretary, *Fact Sheet: National Strategy for Counterterrorism*, Press Release, June 29, 2011.

⁶⁷⁸ White House, *2011 National Strategy for Counterterrorism*, June 2011, 3.

⁶⁷⁹ *Ibid.*, 7–8.

whether they be “natural, accidental, and deliberate origin.”⁶⁸⁰ The plan is intended to provide a comprehensive roadmap for addressing the full range of biosecurity and infectious-disease challenges facing the United States. In this way, for the first time, national biodefense strategy integrates public health and security concerns into a single paradigm. At the 7th Biological and Toxin Review Conference, then Secretary of State Hilary Clinton stated, “Shoring up our domestic and international defenses against intentional attacks will make it easier to detect and respond. We need public health systems that can quickly diagnose outbreaks, whatever their source, and mobilize the right medical resources and personnel. By making any one country more secure, we make the international community more secure at the same time.”⁶⁸¹

The National Strategy for Countering Biological Threats takes a holistic approach to infectious-disease threats by viewing them as a spectrum that encompasses: (1) natural emerging infections, (2) the accidental release of pathogens from a research laboratory, and (3) the deliberate use of disease as a weapon by states and non-state actors, such as criminals and terrorist organizations.⁶⁸² Although the strategy document sets out policy guidelines, it states that their implementation, including specific actions to be taken by federal agencies, “will be directed separately.”⁶⁸³ Thus, the challenge facing the Administration is how to translate the broad guidelines in the National Strategy into a set of concrete policy initiatives, and to give them the political and budgetary support they will require for effective implementation. While it is true, certain attack scenarios involving exotic or bioengineered pathogens would be recognized almost immediately as bioterrorism, in other cases.

⁶⁸⁰ White House, National Security Council, *National Strategy for Countering Biological Threats*, November 2009.

⁶⁸¹ U.S. Department of State, “Remarks at the 7th Biological and Toxin Weapons Convention Review Conference,” Secretary of State, Hilary Rodham Clinton, Palais des Nations, Geneva, Switzerland, December 7, 2011, <http://www.state.gov/secretary/rm/2011/12/178409.htm>.

⁶⁸² Jonathan B. Tucker, PhD Senior Fellow James Martin Center for Nonproliferation Studies, *Addressing the Spectrum of Biological Risks: A Policy Agenda for the United States*, Testimony before the House Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade National Strategy for Countering Biological Threats: Diplomacy and International Programs, March 18, 2010, 1–2.

⁶⁸³ White House, National Security Council, *National Strategy for Countering Biological Threats*, 5.

While the previous presidential administration focused much of its homeland security biodefense efforts on programs focused on preparedness and response to a biothreat after a potential dangerous pathogen is detected, the new strategy appears to also focus more on the nation's biosecurity posture by placing a greater emphasis on preventive measures to reduce the risks of biological weapons proliferation and terrorism; thereby, recognizing the importance of stopping biological threats before they can fully materialize.⁶⁸⁴

The end of 2011 saw the Seventh Annual Review Conference of the BWC (BWC RevCon). The Obama administration called the ambitious work program adopted by the Review Conference “an important step toward reinvigorating the BWC as a premier venue for multinational collaboration on concrete efforts to help counter biological proliferation and bioterrorism.”⁶⁸⁵ The agreed upon goals of the RevCon are as well-intended and auspicious as any international debate to combat such a threat and include strengthening the national implementation of the BWC, an agreement on the need to build capacity to deal with disease outbreaks, including those potentially due to use of biological weapons, and a systematic assessment of developments in the field of science and technology related to the BWC, as well as a review of scientific and technological developments relevant to the Convention. However, the work of the committee may have been overshadowed by controversial research published, which was undertaken in the Netherlands and the United States that increased the virulence of the H5N1 influenza virus (known as the H5N1 research). This research stimulated fears about potential bioterrorism and public health concerns about such virulent strains escaping from laboratories with inadequate biosecurity and biosafety regimes into a world with insufficient public health surveillance and response capacities to deal with such a nightmare and highlighted the distance remaining in achieving an international policy. These concerns are not new, and have been on the BWC agenda for years. Despite public

⁶⁸⁴ Tucker, *Addressing the Spectrum of Biological Risks: A Policy Agenda for the United States*, Testimony before the House Committee on Foreign Affairs, Subcommittee on Terrorism, Nonproliferation, and Trade National Strategy for Countering Biological Threats: Diplomacy and International Programs, 2.

⁶⁸⁵ White House, *Fact Sheet on the Successful Conclusion of the Seventh Review Conference of the Biological and Toxin Weapons Convention*, Press Release, December 23, 2011.

outcry, nothing ended up in the final declaration of the Rev Con. It seems that despite years of warnings from experts about the need to address potential dangers in this realm, the BWC process before and after the Seventh RevCon has contributed little to an issue right in the BWC nexus between public health and bioterrorism.

4. The Global Nuclear Detection Architecture

The GNDA is described as a multi-layered system of detection technologies, programs, and guidelines designed to enhance the nation's ability to detect and prevent a radiological or nuclear attack.⁶⁸⁶ It is one of the first national efforts to coordinate a defense system by bringing together both policy and operations with the intent to address the prevention of a nuclear threats on the U.S. homeland.⁶⁸⁷ Development of the GNDA was mandated in National NSPD-43/HSPD-14⁶⁸⁸ and in the SAFE Port Act of 2006.⁶⁸⁹

The GNDA is described not as a program, but a “network of systems which in part or in entirety support a common objective.”⁶⁹⁰ More specifically, this system is described as “a worldwide network of sensors, telecommunications, and personnel, with the supporting information exchanges, programs and protocols, that serve to detect analyze, and report on nuclear and radiological materials that are out of regulatory control.”⁶⁹¹

The GNDA is based upon a “layered defense” model that works to keep nuclear threats out of U.S. borders but is also a detection system that would be located within the domestic territory. A layered defense provides multiple opportunities to detect and interdict threats. According to DNDO, “It is recognized that no single layer of protection

⁶⁸⁶ U.S. Library of Congress, Congressional Research Service, *The Global Nuclear Detection Architecture: Issues for Congress*, by Dan Shea, CRS Report RL34574 (Washington, DC: Office of Congressional Information and Publishing, March 25, 2009).

⁶⁸⁷ Architecture” is defined by DNDO to represent “the structure which reflects the fully coordinated approach to detect, analyze, and promptly report nuclear and radiological threats GNDA, page 6.

⁶⁸⁸ *National Security Presidential Directive NSPD-43/Homeland Security Presidential Directive (HSPD)-14*.

⁶⁸⁹ *Security and Accountability for Every (SAFE) Port Act of 2006* (P.L. 109-347).

⁶⁹⁰ GNDA, *2010 Strategic Plan*, 22.

⁶⁹¹ *Ibid.*, 6.

can ever be 100% successful” and a layered defense strategy acknowledges this difficulty.⁶⁹² The plan includes stakeholders at the international, national, state and—most notably for its uniqueness—the local level.⁶⁹³

The Domestic Nuclear Detection Office (DNDO) is the government agency in charge of developing the GNDA. The office was initially established under the Bush Administration, under the Department of Homeland Security, to centralize the coordination of the federal response to an unconventional nuclear threat. DNDO is the accountable organization to develop this architecture and to support the deployment of domestic nuclear detection systems.⁶⁹⁴ However, DNDO has not been without criticism. Initially, President Bush appointed Secretary Vayl Oxford, but the position was vacant for an extended period of time and without a permanent leader until President Obama named his replacement in 2010. DNDO has also been publicly criticized for several reasons including a lack of vision, and that the 9/11 Commission’s recommendations on addressing the proliferation of WMD never called for such a detection array or even envisioned such a system.⁶⁹⁵

DNDO was also criticized for being slow to build strategies to guide domestic development including estimating time frames and costs for addressing gaps as directed by Congress,⁶⁹⁶ and for failing to address elements of key gaps in defense systems and the slow development of the GNDA strategic plan, which was mandated in its original

⁶⁹² Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification FY2008, DNDO ACQ-8*, 2008.

⁶⁹³ DNDO Director Warren Stern, “*The Last Line of Defense: Federal, State, and Local Efforts to Prevent Nuclear and Radiological Terrorism within the United States.*” *Testimony Before the House Committee on Homeland Security, Subcommittee on Cybersecurity, Infrastructure Protection, and Security Technologies*, “*The Last Line of Defense: Federal, State, and Local Efforts to Prevent Nuclear and Radiological Terrorism within the United States.*” July 26, 2011.

⁶⁹⁴ White House, Executive Office of the President, *Domestic Nuclear Detection, Homeland Security Presidential Directive National Security Presidential Directive NSPD-43/Homeland Security Presidential Directive (HSPD)-14*, April 15, 2005.

⁶⁹⁵ Alan Wolf, “Implementing the 9/11 Commission’s Recommendations: Bio, Rad and Nuke Threats,” *Homeland Security Watch*, July 26, 2011.

⁶⁹⁶ GAO-08-999T as reiterated on July 26 report. U.S. Government Accountability Office, *Testimony Before the Committee on Homeland Security and Governmental Affairs, U.S. Senate. Nuclear Detection Preliminary Observations on the Domestic Nuclear Detection Office’s Efforts to Develop a Global Nuclear Detection Architecture Statement of David C. Maurer, Acting Director Natural Resources and Environment*, (GAO-08-999T), Washington, DC: GPO, 2008.

mission but was not completed until 2010.⁶⁹⁷ One of the most controversial initiatives that has greatly impacted DNDO's credibility was the much aligned development of a new technology called the Advanced Spectroscopic Program (ASP), which was intended to be the "next generation" of radiological/nuclear detection monitoring at seaports and borders. However, the technology failed to deliver the level of technological advancement after billions had been invested.⁶⁹⁸ The theme of implementing new technologies that did not meet intended requirements or were not appropriately tested and evaluated, and cost benefit analysis that was not completed before deployed in an operational environment has been a challenge to the DNDO mission.

Many factors ultimately will impact the success, or failure of a GNDA. Certainly, a sustainable and robust GNDA will require a constant need to identify and fill critical gaps. Technological limitations,⁶⁹⁹ adaptability of the adversary, and implementation by all stakeholders at all levels of government,⁷⁰⁰ are identified as some of the biggest hurdles in this mission. In addition, perhaps the biggest challenge as with any initiative or program with multiple stakeholder is interagency coordination.⁷⁰¹ Since multiple departments are involved in the implementation, the GNDA does not have one single

⁶⁹⁷ See Testimony of Dana A. Shea, PhD, "Nuclear Terrorism: Strengthening Our Domestic Defenses, Part I" Before the Senate Committee on Homeland Security and Governmental Affairs, June 30, 2010; U.S. Government Accountability Office, *Nuclear Detection: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities*, (GAO-09-257), Washington, DC: GPO, January 2009; Testimony Before the Committee on Homeland Security and Governmental Affairs, U.S. Senate. *Nuclear Detection Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture Statement of David C. Maurer, Acting Director Natural Resources and Environment*; U.S. Government Accountability Office, *Nuclear Detection: Domestic Nuclear Detection Office Should Improve Planning to Better Address Gaps and Vulnerabilities*, (GAO-09-257), Washington, DC: GPO, January 2009.

⁶⁹⁸ U.S. Library of Congress, Congressional Research Service, *The Advanced Spectroscopic Portal Program: Background and Issues for Congress*, by Dana Shea, John Moteff and Daniel Morgan, CSR Report RL34750 (Washington, DC: Office of Congressional Information and Publishing, December 30, 2010).

⁶⁹⁹ DNDO refers to both the absence of detection capability and limitations in existing detection systems as gaps. See Domestic Nuclear Detection Office, Department of Homeland Security, *Congressional Justification, FY 2009, DNDO ACQ-8*, 2009.

⁷⁰⁰ GNDA, *2010 Strategic Plan*, 8–9.

⁷⁰¹ U.S. Library of Congress, Congressional Research Service, *The Global Nuclear Detection Architecture: Issues for Congress*, 11.

budget, which makes it difficult to provide Congress with a more transparent correlation between agency funding and the GNDA.⁷⁰²

Certainly for the architecture to be successful, substantial interagency coordination must occur on the operational and policy levels. Measuring the success of the larger system relative to its individual components and the effectiveness of additional system development is a challenge.⁷⁰³

5. Nuclear Posture Review and April 2010 Summit

The Nuclear Posture Review is the official U.S. government statement on the role of nuclear weapons in its deterrence and defense policy. This policy document is legislatively mandated and drives nuclear investments and war-planning for a five- to 10-year period.⁷⁰⁴ The NPR provides a roadmap for implementing the agenda for global security of nuclear threats. The 2010 Nuclear Posture Review (NPR) is the third formal review of U.S. nuclear strategy conducted since the end of the Cold War.⁷⁰⁵ The preceding reviews were conducted early in each of the Clinton and Bush administrations' first terms both of which were conducted in 1994 and 2001, respectively and occurred under vastly different political circumstances.

The 2010 NPR produced under President Obama does break with some policies of the Bush Administration—most notably by putting unprecedented emphasis on the nuclear threat from terrorists and rogue states, as opposed to nuclear powers, such as Russia and China, and instead places nuclear terrorism and proliferation at the “top of the national agenda,”⁷⁰⁶ and as noted by Secretary of Defense Robert Gates, is intended to

⁷⁰² U.S. Library of Congress, Congressional Research Service, *The Global Nuclear Detection Architecture: Issues for Congress* 15.

⁷⁰³ *Ibid.*, forward.

⁷⁰⁴ “Revised Nuclear Posture Review” (§1070 FY 2008 National Defense Authorization Act).

⁷⁰⁵ Andrew J. Grotto and Joseph Cirincione, “Orienting the 2009 Nuclear Posture Review: A Roadmap,” *Center for American Progress*, November 17, 2008. www.americanprogress.org/issues/security/report/2008/11/17/5159/orienting-the-2009-nuclear-posture-review.

⁷⁰⁶ Comments by Secretary of Defense Robert Gates in NPR introduction.

lead expanded international efforts to rebuild and strengthen the global nuclear non-proliferation regime.⁷⁰⁷

In his April 2009 speech in Prague, President Obama highlighted 21st century nuclear dangers and laid out his philosophical ideas that would become the NPR the following year. In the same speech, he laid out a plan to improve nuclear security, which included convening a nuclear security summit in Washington, DC, in April 2010.⁷⁰⁸ In an auspicious move, the President declared that to overcome these grave and growing threats, the United States will “seek the peace and security of a world without nuclear weapons.”⁷⁰⁹ The President pledged to take concrete steps toward that goal by reducing the number of nuclear weapons and their role in U.S. national security strategy while at the same time promising that as long as nuclear weapons exist, the United States will maintain a safe, secure, and effective arsenal, both to deter potential adversaries and to assure its U.S. allies and other security partners that America’s security commitments are reliable.

These classic nuclear security assurances and postures raise a new policy conundrum of sorts for the future of nonproliferation. If the threat premise is that nuclear states are not the main adversary and if terrorists are not going to use missile systems, how then can the NPR support counterterrorism efforts? According to the NPR, missile defense may play an indirect role in deterring nuclear terrorism as a means of strengthening this nation’s ability to mobilize broad international support for the measures needed to reinforce the non-proliferation regime and secure nuclear materials worldwide.⁷¹⁰ The second proposition underlying the bipartisan consensus is that many countries consider U.S. compliance with its nuclear disarmament obligations under Article VI of the Non-Proliferation Treaty, or NPT, a precondition before supporting additional U.S. nonproliferation initiatives vital to countering 21st century nuclear threats. These threats are characterized by the diffusion of nuclear materials, expertise,

⁷⁰⁷ *Nuclear Posture Review Report*, United States Department of Defense, April 2010, vi.

⁷⁰⁸ White House, “Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic,”

⁷⁰⁹ *Ibid.*

⁷¹⁰ *Nuclear Posture Review Report*, iv–v.

and technology—much of it with a civilian dimension—to state and non-state actors enabled by globalization and economic development. In the words of Secretaries Shultz, Kissinger, Perry, and Senator Nunn, “Without the vision of moving toward zero [nuclear weapons], we will not find the essential cooperation required to stop our downward spiral.”⁷¹¹

6. Coordination and Implementation

In practice, U.S. nonproliferation/counter-proliferation policy covers an enormous spectrum of activities. The scope of activities encompasses the maintenance of multilateral non-proliferation regimes for chemical, biological, and nuclear weapons, and missile delivery systems, as well as substantial programs to secure nuclear weapon materials and dangerous pathogens in the United States and abroad. Also included in this scope are the gathering of intelligence on a worldwide basis and its effective use, domestic and global coordination of technology controls, a multi-billion dollar, multi-agency research budget, the management of public health preparedness, including the development and manufacture of vaccines against bioweapon agents, and major elements of U.S. defense policy, including the U.S. deterrence posture (important to reassure allies they do not need nuclear weapons of their own), and the development of missile defenses.⁷¹² In other words, many programs and government entities are charged with implementing and overseeing initiatives.

In addition to those traditional multilateral proliferation regimes, a December 2011 GAO report identified and reviewed 21 U.S. government programs and offices under five federal agencies—NNSA, the DoD, Department of State, DHS, and the Department of Justice—that play a role in preventing and detecting the smuggling of

⁷¹¹ George P. Shultz, William J. Perry, Henry A. Kissinger, and Sam Nunn, “A World Free of Nuclear Weapons,” *The Wall Street Journal*, January 4, 2007, <http://online.wsj.com/article/SB116787515251566636.html>; Toward a Nuclear-Free World,” *The Wall Street Journal*, January 15, 2008, “Toward a Nuclear-Free World,” *The Wall Street Journal*, January 15, 2008, http://online.wsj.com/article/SB120036422673589947.html?mod=opinion_main_commentaries.

⁷¹² Anya Loukianova and Leonard Spector, *New WMD Coordinator Has the Right Stuff, But Will He Have the Right Staff?* Center for Nonproliferation Studies, February 13, 2009.

nuclear materials and illicit trafficking of related technologies overseas.⁷¹³ These programs include conducting research and development on radiation detection technologies, deploying radiation detection equipment along foreign borders and points of transit, training and equipping foreign customs and border security officials to identify and interdict illicit nuclear materials or technology transfers, assisting foreign governments in the development of export control systems, enhancing and coordinating with foreign anti-smuggling law enforcement and prosecutorial capabilities, and analyzing potential foreign nuclear smuggling cases and incidents.⁷¹⁴

The National Strategy to Combat Weapons of Mass Destruction has provided the President’s vision on how the entire interagency should address this catastrophic threat to the nation. While the Departments of State, Defense, and Homeland Security have the primary roles in executing this strategy, it does not alleviate the other departments from also taking actions to combat this threat. In identifying each agency’s focus, it raises the question, “is anyone directing or synchronizing actions in order to achieve effects?” While the Department of State has not prepared a specific strategy, its actions appear that it is executing the nonproliferation intent presented in the national strategy—its primary treaty emphasis has been on strengthening the Nuclear Non-Proliferation Treaty.

Several key reports on terrorism and WMD have all highlighted common problems with coordination in relation to WMD. The 2005 report of the Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction (known as the Robb-Silberman Commission) noted the need to create “government-wide ‘strategic operational planning’” on WMD issues outside the National Counterproliferation Center.⁷¹⁵ Difficulties in coordinating WMD efforts to combat nuclear proliferation were also noted as recently as December 2008, in “World at Risk,” the report of the Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism in December 2008.

⁷¹³ U.S. Government Accountability Office, *Action Needed to Address NNSA’s Program Management and Coordination Challenges*, (GAO-12-71), Washington, DC: GPO, December 14, 2011, 2.

⁷¹⁴ Ibid.

⁷¹⁵ *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, Report to the President of the United States*, 566–567.

According to the GAO, “DNDO has taken steps to develop a global nuclear detection architecture but lacks an overarching strategic plan to help guide how it will achieve a more comprehensive architecture.” Development of the GNDA is one attempt to coordinate all the programs related to this issue; however, despite creating a comprehensive strategy, the implementation of the architecture is complicated. Full implementation of the GNDA is the responsibility of several different departments and agencies, including the Departments of State, Defense, Energy, and Justice that maintain their respective responsibilities for policy guidance and implementation portion of the GNDA.⁷¹⁶ Specifically, DNDO has developed an initial architecture after coordinating with the DoD, DOE, and State to identify 74 federal programs that combat the smuggling of nuclear or radiological material.⁷¹⁷ However, it is unclear whether these more defined roles give authority to these lead agencies to provide direction and guidance across multiple agencies and programs.⁷¹⁸

Also needing clarification is the lead agencies responsible for different elements of the global architecture, including efforts overseas. Specifically, for the exterior layer of the global architecture—the portion focused on enhancing international capabilities for detecting nuclear and radiological materials abroad.⁷¹⁹ For instance, State and DoD officials told GAO that neither State nor any other federal agency has the authority to direct the activities or coordinate implementation of programs administered by other agencies involved in preventing or detecting nuclear smuggling overseas.⁷²⁰

⁷¹⁶ The Office of the Director of National Intelligence, and the Nuclear Regulatory Commission.

⁷¹⁷ U.S. Government Accountability Office, *Testimony Before the Committee on Homeland Security and Governmental Affairs, U.S. Senate. Nuclear Detection Preliminary Observations on the Domestic Nuclear Detection Office's Efforts to Develop a Global Nuclear Detection Architecture Statement of David C. Maurer, Acting Director Natural Resources and Environment.*

⁷¹⁸ U.S. Government Accountability Office, *Action Needed to Address NNSA's Program Management and Coordination Challenges.*

⁷¹⁹ Ibid.

⁷²⁰ Ibid.

Another criticism of DNDO is that it has too narrowly focused its efforts on radiation detection and should instead have a role to “....be one (major) piece within a broader effort to defeat nuclear terrorism.”⁷²¹

As noted earlier, the “World at Risk Report” makes recommendations for improved coordination of activities relative to nuclear proliferation.⁷²² Specifically, this report recommended the creation of a WMD terrorism prevention coordinator in the White House.⁷²³ “No single person is in charge of and accountable for preventing WMD proliferation and terrorism, with insight into all of [the] committees and interagency working groups focused on these issues.”⁷²⁴ This situation is similar to the requirement defined in the 2007 Implementing Recommendations of the 9/11 Commission Act.⁷²⁵ That commission proposed that the President designate “a White House principal advisor for WMD proliferation and terrorism” that would not require Senate confirmation. Such a role was to oversee the efforts in the areas of proliferation and terrorism, but would also lead the formulation, advocacy, and oversight of a comprehensive U.S. counter-WMD policy and strategy. The head of this office is to advise the President, “formulate national strategy and policy, lead interagency coordination and implementation, and oversee the development of a comprehensive coordinated budget for these issues.”⁷²⁶

Despite these recommendations, neither the Bush nor Obama Administrations made appointments until 2009 when President Obama named a Coordinator for the Prevention of Weapons of Mass Destruction Proliferation and Terrorism under the National Security Council.⁷²⁷ This new position is under the National Security Council

⁷²¹ Michael Levi, “U.S. Efforts to Detect Smuggled Nuclear Weapons,” *Council on Foreign Relations*, July 27, 2006, <http://www.cfr.org/publication/11116>.

⁷²² World at Risk, *The Report of the Commission on the Prevention of WMD Proliferation and Terrorism*, December 2, 2008, ch. Government Organization and Culture.

⁷²³ Ibid.

⁷²⁴ Ibid.

⁷²⁵ *Implementing Recommendations of the 9/11 Commission Act of 2007*, Public Law 110-53.

⁷²⁶ U.S. Library of Congress, Congressional Research Service, *The Global Nuclear Detection Architecture: Issues for Congress*, 15.

⁷²⁷ Judith Miller, “Gary Sandmore Tapped for Weapons of Mass Destruction ‘Czar’” *Fox News.com*, January 29, 2009, www.foxnews.com/politics/2009/01/29/gary-samore-tapped-weapons-mass-destruction-czar.

and serves as the central organizer for U.S. efforts to improve nuclear security and prevent nuclear terrorism worldwide.⁷²⁸ However, more direct involvement from the NSC is also requested. Despite this new position, some have advocated for the NSC to play a stronger role in nonproliferation issues. DOE and NNSA agreed with the GAO's recommendation that the NSC lead the interagency development of a more detailed implementation plan.⁷²⁹

To provide a clear sense of the overall scope of work anticipated under the President's initiative to secure all vulnerable nuclear materials worldwide within 4 years, we recommend that NSC lead and coordinate through NNSA, DoD, State, and other relevant agencies, including members of the intelligence community, the development of a comprehensive plan for implementing the initiative.⁷³⁰

Subsequent reports continued to state, "we recommended that the Secretaries of Defense and Energy develop an integrated plan for improved coordination of all U.S. threat reduction and nonproliferation programs."⁷³¹

7. The International Community's Response—New Approaches

A major weakness of existing multilateral regimes that the next generation of nonproliferation instruments is attempting to address is trading, smuggling, and trafficking of WMD-related materials. No multilateral regime before the PSI and Resolution 1540 directly addressed these crucial avenues by which WMD materials are traded. The matter was largely left to the law enforcement and border patrol in individual nation-states.⁷³²

In 2003 and 2004, the United States created two significant international mechanisms to attempt to stem the tide of illegal proliferation: the Proliferation Security

⁷²⁸ At the time of this writing, the position's influence over the coordination of such a complex issue remains not yet realized.

⁷²⁹ U.S. Government Accountability Office, *Nuclear Nonproliferation*, 9.

⁷³⁰ *Ibid.*, 31.

⁷³¹ *Ibid.*, 4.

⁷³² Shefloe, *The Proliferation Security Initiative and United Nations Security Council Resolution 1540: International Law and the World's Recent Efforts to Combat the Proliferation of Weapons of Mass Destruction*, 33.

Initiative (PSI), and the passing of United Nations Security Council Resolution (UNSCR) 1540. These new mechanisms were instituted to fill gaps in the existing non-proliferation regime, although they approach nonproliferation by different methods. One utilizes a small voluntary coalition, while the other imposes mandatory obligations of a universal nature. Both were created through international legal methods, but arguably exist due to novel legal authorities.⁷³³ Both the Proliferation Security Initiative and Resolution 1540 represent a departure from multilateral treaty regimes that the international community has utilized for over 100 years in attempts to curb the proliferation of WMDs or chemical and biological weapons.⁷³⁴ These new mechanisms were developed as evolving global security threats have highlighted the consent-based treaties' "futility and ineffectiveness,"⁷³⁵ and represent a new generation of multilateral approaches to combating weapons of mass destruction.⁷³⁶ These new mechanisms add another layer to the non-proliferation regime that may clarify and focus efforts where greater effort is needed, or create more political divisiveness, and ultimately, undermine existing non-proliferation regimes. When passed, these initiatives initially carried a strong strategic message by demonstrating the resolve of governments to halt the WMD threat and represented the first significant efforts to link the issues of proliferation and the nexus of terrorism.

8. The Proliferation Security Initiative

The Bush Administration announced the Proliferation Security Initiative (PSI), as a proactive international (voluntary) partnership to fill gaps in the multilateral WMD regime by leveraging military, economic and diplomatic tools to prevent the illicit trafficking of chemical, biological, and nuclear weapons and missile technology by

⁷³³ Shefloe, *The Proliferation Security Initiative and United Nations Security Council Resolution 1540: International Law and the World's Recent Efforts to Combat the Proliferation of Weapons of Mass Destruction*, ii.

⁷³⁴ *Ibid.*, 1.

⁷³⁵ *Ibid.*

⁷³⁶ Jack I. Garvey, *The International Institutional Imperative for Countering the Spread of Weapons of Mass Destruction: Assessing the Proliferation Security Initiative*, 10 J. Conflict & Sec. L. 125 at 126 (2005).

interdicting threatening shipments of WMD and missile-related technologies.⁷³⁷ The focus of the PSI is not on preventing WMD terrorism but rather on promoting counterproliferation cooperation among like-minded states, and especially, on curtailing North Korea's nuclear-related trade.⁷³⁸

On May 31, 2003, U.S. President George W. Bush introduced the PSI during a speech at the G8 Summit in Krakow, Poland.

When WMD or their components are in transit, we must have the means and authority to seize them. So today I announce a new effort to fight proliferation called the Proliferation Security Initiative. The United States and a number of our close allies, including Poland, have begun working on new agreements to search planes and ships carrying suspect cargo and to seize illegal weapons or missile technologies. Over time, we will extend this partnership as broadly as possible to keep the world's most destructive weapons away from our shores and out of the hands of our common enemies.⁷³⁹

The premise of the PSI lies in the assumption that proliferation is a universal threat and pro-active, collective action must be taken to ensure that deadly weapons do not fall into the possession of terrorists or rogue states.⁷⁴⁰ According to the members of PSI, the initiative is a necessary approach to fill gaps in the existing non-proliferation regimes, particularly the problems of non-state actors seeking to acquire WMD and of countries that do not fulfill their international obligations, do not join existing regimes, or do not follow international legal norms.⁷⁴¹

The PSI has a primary aim to restrict trafficking of WMD in the air, on land, or at sea by raising the stakes, both politically and economically, of weapons trafficking; thus,

⁷³⁷ *Arms Control Today*, "The Proliferation Security Initiative (PSI) At a Glance," October 2012, <http://www.armscontrol.org/factsheets/PSI>.

⁷³⁸ Jack Boureston and Tanya Ogilvie-White, "Seeking Nuclear Security Through Greater International Coordination," *Center for Foreign Relations*, March 2010, 7.

⁷³⁹ White House, Office of the Press Secretary, "Remarks by the President to the People of Poland", Krakow, Poland," May 31, 2003, <http://www.whitehouse.gov/news/releases/2003/05/print/20030531-3.html>.

⁷⁴⁰ U.S. State Department, Bureau of International Security and Nonproliferation, "The Proliferation Security Initiative (PSI) Fact Sheet," May 26, 2008, <http://www.state.gov/t/isn/rls/fs/105217.htm>.

⁷⁴¹ U.S. Department of State, "Proliferation Security Initiative: Chairman's Statement at the Second Meeting, Brisbane, July 9–10, 2003," <http://www.state.gov/t/isn/rls/other/25377.htm>.

becoming a major deterrent to would-be proliferators.⁷⁴² The U.S. Department of State characterizes PSI as an effort to seek “cooperation from any state whose vessels, flags, ports, territorial waters, airspace, or land might be used for proliferation purposes by states and non-state actors of proliferation concern.”⁷⁴³

The PSI is unique in specifically stopping materials in transit through an integration of diplomacy, information sharing, law enforcement, and if necessary, military action. The new initiative was led by the United States, and consisted of 10 other states that sought to stem the proliferation of WMD and their components.⁷⁴⁴ Over the next few years, additional countries also joined.⁷⁴⁵ Today, the PSI counts several nations as participants in an ad hoc basis, in addition to the core membership and has the support of more than 90 nations.⁷⁴⁶ With the establishment of a series of new agreements and partnerships, the PSI attempts to create a legal framework for intercept operations as a counterproliferation strategy. Interdiction principles were released, becoming the PSI’s core document.⁷⁴⁷ It formally stated the commitment of the PSI core members and outlined a framework for action against proliferation. According John Bolton, the then Under Secretary of State, “the PSI reflects a need for a more dynamic, proactive approach to the global proliferation problem” to collectively work to develop a broad range of diplomatic, economic, and military options to interdict threatening shipments of WMD and missile-related equipment and technologies.⁷⁴⁸

⁷⁴² Sheffloe, *The Proliferation Security Initiative and United Nations Security Council Resolution 1540: International Law and the World’s Recent Efforts to Combat the Proliferation of Weapons of Mass Destruction*, 39.

⁷⁴³ U.S. Department of State, “Proliferation Security Initiative,” (n.d.), <http://www.state.gov/t/isn/c10390.htm>.

⁷⁴⁴ The 11 original members were Australia, Britain, France, Germany, Italy, Japan, the Netherlands, Poland, Portugal, Spain, and the United States.

⁷⁴⁵ Canada, Denmark, Norway, and Singapore joined the PSI, with the Czech Republic and Russia.

⁷⁴⁶ Robert G. Joseph, *Under Secretary for Arms Control and International Security, Remarks to the Capitol Hill Club*, Washington, DC, July 18, 2006.

⁷⁴⁷ White House, U.S. Office of the Press Secretary, *Statement by the Press Secretary: Principles for the Proliferation Security Initiative*, September 4, 2003; White House, U.S. Office of the Press Secretary, *Proliferation Security Initiative: Statement of Interdiction Principles*, September 3, 2003.

⁷⁴⁸ *U.S. Efforts To Stop the Spread of Weapons of Mass Destruction: Testimony Before the House Comm. on Int’l Relations, 108th Cong. (2003) (statement of John R. Bolton, Under Secretary of State for Arms Control and International Security)*, 2003.

The U.S. claims that the PSI has proven to be a success for the United States in not only increasing partner capabilities but also in building diplomatic credibility for future endeavors.⁷⁴⁹ However, current international law does not explicitly permit the use of interdiction as a tool of counterproliferation. Therefore, the legal ramifications and considerations of the PSI must be examined and an analysis of the possible alternatives and policy options must be made so that U.S. security planners can best address current proliferation threats, while maintaining their international commitments.⁷⁵⁰

While PSI is considered one of the first—and only—initiatives to take a flexible international approach to countering issues affecting both proliferation and terrorism prevention, the success of PSI remains difficult to quantify. Seven incidents of ship interdiction and boarding are commonly cited as PSI successes.⁷⁵¹ Criticisms of the initiative and its implementation are also plentiful. For instance, one common shortcoming of PSI is that it does not grant any legal authority for ship boarding or interdiction beyond the UN Convention of the Law of the Sea and other various bilateral agreements.⁷⁵² Other nations in opposition cite a concern that PSI could violate their sovereignty and have questioned the legality of its interdictions. Still others have pointed out that PSI is limited by “having neither an independent budget nor coordinating mechanisms, a legal framework in which to lock in long-term, verifiable, and irreversible member state commitments.”⁷⁵³

⁷⁴⁹ U.S. State Department, Bureau of International Security and Nonproliferation, “The Proliferation Security Initiative (PSI) Fact Sheet.”

⁷⁵⁰ Erin E. Harbaugh, “The Proliferation Security Initiative: Counterproliferation at the Crossroads,” *Strategic Insights* III, no. 7 (July 2004).

⁷⁵¹ Wade Boese, “Interdiction Initiative Successes Assessed: Recently Claimed Proliferation Security Initiative Successes, Arms Control Association,” *Arms Control Today*, July/August 2008, http://www.armscontrol.org/act/2008_07-08/Interdiction; Council on Foreign Relations, “The Global Nuclear Nonproliferation Regime,” Issue Brief, June 25, 2013, <http://www.cfr.org/arms-control-disarmament-and-nonproliferation/global-nuclear-nonproliferation-regime/p18984>.

⁷⁵² Council on Foreign Relations, “United Nations Convention on the Law of the Sea,” December 10, 1982, <http://www.cfr.org/international-law/united-nations-convention-law-sea/p16396>.

⁷⁵³ Council on Foreign Relations, “The Global Nuclear Nonproliferation Regime.”

9. UN Resolution 1540 and Its Extension

In 2004, the international community came together with UN resolution 1540, and again with its extension UNSCR 1877 in 2010. UNSCR 1540 established for the first time legally binding obligations on all UN member states to take and enforce effective measures against the proliferation of, or acquisition by non-state actors, of chemical, nuclear or biological weapons, their means of delivery or related materials.⁷⁵⁴ These treaty-based international institutions are being used to analyze export control capacities in the context of UNSCR1540's overarching counter-proliferation mandate. Unlike the three guiding documents of nonproliferation that apply to states, Resolution 1540 tries to fill in the gaps by addressing non-state actors. Since individuals are not subject to international law, under the resolution, states are required to ensure a national legal framework of laws, regulations and controls exist.

For the first time, the Security Council created a resolution focused on security that dealt with a function rather than a state. A mere seven months after President Bush's speech, the resolution passed outlining that states, ". . . refrain from providing any form of support for non-State actors. . . adopt and enforce appropriate effective laws . . . and enforce effective measures to establish domestic controls . . ." This single resolution placed the onus on all nations to take active steps to confront this new threat. What it was unable to accomplish was establish consistency between countries or an enforcement mechanism to ensure countries met their obligations. This resolution opened the door for much follow on discourse about ways to halt terrorist financing with respect to WMD acquisition, as well as reinforce "rule of law" as a means of both combating WMD but also combating terrorism in general. In all three cases, PSI, the Global Partnership, and UNSCR 1540, great levels of initial enthusiasm and action have been demonstrated. However, while the Bush Administration's support around the world waned, so did its ability to carry forth with additional diplomatic efforts.⁷⁵⁵

⁷⁵⁴ See UN website at <http://www.un.org/sc/1540/> or the State Dept website on UNSCR 1540.

⁷⁵⁵ Terrell, *Updating Our Strategy for Combating Weapons of Mass Destruction*, 14.

Resolution 1540 requires states to “promote the universal adoption and full implementation, and, where necessary, strengthening of multilateral treaties to which they are parties, whose aim is to prevent the proliferation of nuclear, biological or chemical weapons”⁷⁵⁶ and to “fulfill their commitment to multilateral cooperation, in particular within the framework of the International Atomic Energy Agency, the Organization for the Prohibition of Chemical Weapons, and the Biological and Toxin Weapons Convention.”⁷⁵⁷ The focus of Resolution 1540 is not the treaties per se but the resulting national legislation and regulations that allow it to take action against non-state actors.⁷⁵⁸

A committee was established under the Security Council to monitor and promote implementation of these national legal measures, and states have been required to submit a report on their implementation efforts to this committee. The UN Security Council will then meet to review and likely extend the mandate of the 1540 Committee, which was extended in April 2011.

The adoption of Resolution 1540 raises several issues and poses ongoing challenges for the international community. The first and foremost question involves the Security Council’s authority. The Council, in unanimously adopting the resolution, has imposed obligations on states that neither negotiated nor ratified the process and now have no choice but to comply. Also raised was the question of whether a UN resolution should address an issue traditionally covered by the three main treaties of the non-proliferation regime. However, these treaties do not directly regulate non-state actor behavior and the requirements outlined in the Nuclear Non-Proliferation Treaty (NPT), the Chemical Weapons Convention (CWC), and the Biological and Toxins Weapons Convention (BTWC) leave substantial gaps, especially given the less than universal adherence to these WMD weapons-related treaties. The resolution is universal unlike the three main WMD treaties. Whereas the three main WMD treaties, the Non-Proliferation

⁷⁵⁶ S/RES/1540(2004) article 8a.

⁷⁵⁷ Ibid., article 8c.

⁷⁵⁸ Peter Van Ham, and Olivia Bosch, “Global Non-Proliferation and Counter-Terrorism: The Role of Resolution 1540 and Its Implications,” *Royal Institute of International Affairs*, 2007, 15.

Treaty, the Chemical Weapons Convention and the Biological and Toxin Weapons Convention, are first and foremost applicable to states, the resolution focuses on non-state actors. The resolution, adopted under Chapter VII of the United Nations Charter, requires enforcement, which emphasizes the role states are expected to play to pre-empt proliferation⁷⁵⁹ because it hints at the possibility of sanctions in the case of non-compliance. It also tries to address the enforcement weakness in the treaties and export control regimes.

Proponents of the resolution advocate that it will complement, rather than conflict, with the existing treaties. For example, the Director-General of the Organization for the Prohibition of Chemical Weapons (OPCW), Ambassador Rogelio Pfrter, provided a briefing to the 1540 Committee in which he emphasized that improvements in measures to implement the CWC are occurring in parallel with the complementary requirements laid down in Resolution 1540, which are binding on all UN member states, including non-member states of the OPCW.⁷⁶⁰

Another issue that has been raised is whether the Security Council will back up the resolution with enforcement measures to hold states accountable for their compliance, and whether states fully appreciate the implications of the obligations that have been placed upon them. Furthermore, states must meet the resolution's legally binding requirement to institute "appropriate" and "effective" measures to deny non-state actors NBC weapons. However, the resolution does not define what is "appropriate" or "effective," which leaves this task to the Committee and the states themselves to interpret these standards. This situation brings to light concerns about the lack of enforcement and what becomes of non-compliant states when "non-compliance" has not been clearly defined. A final issue is the effective implementation of Resolution 1540 and the responsibility of international organizations and states with the capacity to satisfy the terms of the resolution to help those 150 nations without the adequate legal infrastructure to do the same successfully.

⁷⁵⁹ S/RES/1540(2004) article 10.

⁷⁶⁰ Organisation for the Prohibition of Chemical Weapons, "OPCW Director-General Briefs U.N. Security Council's 1540 Committee", April 18, 2005, <http://www.opcw.org/news/browse/94/article/opcw-director-general-briefs-un-security-councils-1540-committee/>.

Critics of the measure argue that many countries, particularly developing ones, may be hesitant to implement 1540 because it will require potentially significant investments in a range of specialized regulatory capacity—resources that they might expend elsewhere.⁷⁶¹ However, UNSC-1540 does not define what “appropriate effective” means, leaving the interpretation to individual countries’ discretion, nor does it provide funding to support implementation.⁷⁶² As a result of these factors, implementation among developing countries is weak.

Resolution 1540 obligates all nations to implement laws to prevent the proliferation of WMD, especially to non-state actors. The vast, comprehensive approach leads to difficulties in the legal context, including interpretations and obligations, but more significantly, it raises questions of what constitutes full implementation, and eventually, future enforcement. Enforcement has long been a challenge within the non-proliferation regime. While Resolution 1540 shows the resolve of some states to stop the proliferation of WMD weapons to non-state actors, its provisions will require much cooperation by states to be effective.

One assessment of this security measures asserts, “Resolution 1540 is the most important pillar of the evolving nuclear security regime, but its implementation has been slow and patchy.”⁷⁶³

10. 1977 Extension

An April 20 White House statement called the continuation of the committee’s work “an important element of the United States’ nonproliferation objectives” and highlighted a March 31 White House announcement that Washington intended to contribute \$3 million to a UN-administered fund to support the committee’s efforts to assist states in implementing Resolution 1540’s requirements.

⁷⁶¹ Grotto and Cirincione, “Orienting the 2009 Nuclear Posture Review: A Roadmap,” 6.

⁷⁶² Ibid.

⁷⁶³ Boureston and Ogilvie-White, “Seeking Nuclear Security, Through Greater International Coordination,” 3.

On April 20, the United Nations Security Council unanimously adopted Resolution 1977. The measure extends the mandate of the 1540 Committee, which is charged with executing the 2004 resolution, assessing progress toward its implementation, and aiding governments in fulfilling their obligations to prevent non-state entities from obtaining WMD or the means to deliver them.⁷⁶⁴

F. SUMMARY

Efforts to address WMD threats and proliferation comprehensively are well documented in government reports and programs. The question is whether these programs are effective and innovative enough to deal with the recent developments overlapping nonproliferation and counterterrorism efforts. Coordination of multiple agencies and entities continues to be a challenge as does implementation of several domestic and international initiatives.

⁷⁶⁴ *Statement on the Passing of UN Security Council Resolution 1977*, April 20, 2011.

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VI. RECOMMENDATIONS AND CONCLUSIONS

A. A NEW ERA OF PROLIFERATION CHALLENGES

1. Conclusion

Since the beginning of the new century, a confluence of events has increased the threat that non-state actors may acquire nuclear, biological, or chemical weapons. These threats look drastically different from the national-state combatant paradigm when old beliefs about nuclear threats were first introduced. The terrorist attacks of 9/11, information about the ambitions of certain terrorist organizations to acquire and use WMD weapons, and revelations about a global proliferation network, should galvanize the international community to rethink its approach to the non-proliferation regime.

While neither the non-proliferation regime, nor its core agreements, should be abandoned, they do need to be reinvented to reflect changes in the new world following the end of the Cold War, the expansion of nuclear technologies, and the emergence of transnational terrorism. Governments must seek to include measures to supplement existing nonproliferation treaties to make those treaties relevant to the threats faced today.

The 9/11 attacks resulted in an unprecedented U.S.-led effort to implement, enforce and expand existing regime norms. However, new and innovative measures, such as Pacific Security Initiative (PSI), and other interdiction and enforcement initiatives, operate in the absence of an overarching international framework, which results in the failure to capture fully the integration of the enforcement mission into the non-proliferation regime. Revelations about the Khan network catalyzed international consensus behind a universal mechanism that could capture and integrate “traditional” regime-based and newer anti-proliferation-based approaches to combat illicit WMD trafficking and terrorism.

The central argument of this paper is that effective strategies on the state⁷⁶⁵ level are the requirement for meeting threats from non-state actors. The international community must tie the non-proliferation regime into (domestic) law enforcement, intelligence, and interdiction efforts to stop WMD threats. Solutions to this new WMD threat may look unconventional to the non-proliferation regime but these additions will make all elements across the spectrum of approaches more effective.

One reason problems still exist is that the regime is still largely stuck in an archaic Cold War paradigm that has not yet kept pace with new threats. One complicating factor of proliferation is the “Rational Actor Theory,”⁷⁶⁶ which has guided international theory and norms but does not necessarily apply to non-state actors. The rational actor model is based on rational choice theory, adopts the state as the primary unit of analysis, and inter-state relations (or international relations) as the context for analysis.⁷⁶⁷ According to the rational actor model, a rational decision-making process is used by a nation-state.⁷⁶⁸ The state is seen as a monolithic unitary actor, capable of making rational decisions based on preference ranking and value maximization.⁷⁶⁹ The rational actor model has been subject to criticism. The model tends to neglect a range of political variables, of which Michael Clarke includes, “political decisions, non-political decisions, bureaucratic procedures, continuations of previous policy, and sheer accident.”⁷⁷⁰ Issues of how do deter and

⁷⁶⁵ The use of the word “state” in all cases refers to a “nation-state” as opposed to domestic state within the U.S. or other jurisdiction.

⁷⁶⁶ Michael Clarke, *The Foreign Policy System: A Framework for Analysis*, in *Understanding Foreign Policy: The Foreign Policy Systems Approach*, ed. Michael Clarke and Brian White (Cheltenham: Edward Elgar 1989), 27–59.

⁷⁶⁷ Ibid.

⁷⁶⁸ Ibid.; see also, Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: A Debate Renewed*, New Edition (New York, 1995, 2003); Ogilvie-White, “Is There a Theory of Nuclear Proliferation? An Analysis of the Contemporary Debate.”

⁷⁶⁹ Ibid., Clarke, *The Foreign Policy System: A Framework for Analysis*, in *Understanding Foreign Policy: The Foreign Policy Systems Approach*.

⁷⁷⁰ Ibid.; see also Amitai Etzioni, “Rational Actors: Neither Mad nor M.A.D: The Meanings of Rationality, Rogue States and Terrorists,” *Defense and Security Analysis*, George Washington University 26, no. 4 (December 2010): 431–438.

dissuade WMD terrorism must take this new paradigm into consideration; terrorists (or even rogue nations who may help them) may not react or respond the way a nation-state would.

However, some researchers who have studied WMD terrorism sometimes disagree with the notion that terrorists are non-rational actors. In research conducted by the Belfar Institute, the researchers looked at the decision-making militant Islamists choosing to use WMD weapons. It found that the group would employ a rationalized risk-gain assessment in gauging its level of interest, motivation, and justification. This expert concludes that the:

Ideology of militant Islamists is extreme, but it is not irrational, “it is a well-reasoned, well-developed weltanschauung, or world view. Thus, the rational actor model can be applied to militant Islamists, who possess an internally consistent belief system. The motivation to possess and use WMD flows logically from an extreme, but very rational set of concrete goals that are based on a certain interpretation of history and religion.”⁷⁷¹

The question becomes whether it is appropriate to apply international relations models to the evolving problems of terrorism.

Moreover, the Cold War concept of deterrence is not the only thing that has changed in this new security environment. Transnational terrorism, globalization, the easy sharing of information, technology diffusion, and a criticality of intelligence and government systems all enhance—and complicate—the system in which this nation operates. Smugglers and would-be nuclear terrorists, regardless of motivation (financial, ideological, etc.) are able to work through the cracks, of the international system. It is, therefore, imperative to shore up the gaps they may be able to exploit. More extensive improvements are needed to the international non-proliferation regime to block the emergence of new networks and to detect them promptly if they do arise,⁷⁷² which includes leveraging the non-proliferation framework already in existence by supplementing with efforts to combat international criminal networks and overarching

⁷⁷¹ Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 16–17.

⁷⁷² Albright and Hinderstein, “Unraveling the A.Q. Khan and Future Proliferation Networks,” 112.

counter-terrorism objectives. In short, it is necessary to rethink how WMD terrorism's interconnectedness to the larger global agenda on security and threats and nonproliferation are viewed.

Departures from the current policy approach should be taken when they are essential to bolstering an effective deterrent. Currently, nonproliferation and WMD counterterrorism move in two distinct but parallel paths—one path that reduces WMD dangers by maintaining classical forms of deterrence and security (such as material controls and international treaties), and the other that seeks to stop terrorists through intelligence sharing and traditional legal means. However, to address new and complicated threats adequately, it is essential to adjust the parallel paths to intersect at the critical nexus between the two. Nonproliferation and counterterrorism are no longer mutually exclusive imperatives.

However, the caution is that the “nexus” should not create an imbalance in resources (time, money, political will) on a lower-probability contingency (actual WMD attack by a terrorist group through illegal acquisition) at the expense of the higher probability threat (conventional mass casualty attacks).⁷⁷³ This problematic planning assumption has troubled national and homeland security advisors since 9/11. Hedging against the worst-case scenario is critically necessary but should not be done at the expense of more common scenarios.⁷⁷⁴ The Bush Administration may have made this critical mistake in translating the nexus concept into practice with its extensive focus and subsequent action on Iraq's WMD program rather than other defensive and intervention methods.

Nonproliferation and counterterrorism are no longer mutually exclusive issues. Modernizing the current regime could place this nation in a better position to deal with these new challenges. Conversely, by considering WMD use as a possible operational contingency, the chances are increased of detecting potential plots and proliferation networks through normal intelligence practices. A complex approach must be

⁷⁷³ General research all state that a WMD attack is low probability with differing forms of reasoning.

⁷⁷⁴ Litwak, *Assessing the Nexus of Proliferation and Terrorism*.

implemented that bridges the divide between anti-proliferation and counterterrorism. In addition, it must include not just diplomatic solutions, but legal ones, as well to account for non-state actors. International frameworks need to be expanded and have more teeth. Traditional non-proliferation vehicles have tried to shore up the gap, but they are working with policies originally designed for a different purpose, for instance, the NPT.

Rolf Mowatt-Larssen summarizes the current challenges in regards to nuclear materials throughout the modern world:

Ensuring complete control over nuclear equipment, material, and technology is more difficult now than at any time in the past. There is a burgeoning global interest in all things nuclear. More states are seeking nuclear technologies, power, and weapons. Production, transportation, and storage of nuclear materials will expand throughout the 21st century. The presence of more material in more places increases the odds of a security breach leading to the loss of a bomb or the theft of materials to make a bomb. The anticipated global renaissance in nuclear energy will pose new challenges in this regard unless the associated proliferation risks are fully taken into account in decisions on materials processing, transportation, and storage. In this light, it is essential to secure not only weapons-grade plutonium and uranium from military programs, but also plutonium, highly enriched uranium, and other materials from civilian programs. Materials that would not meet the standards required for a nuclear weapon developed by a state might be usable in a terrorist's yield-producing bomb.⁷⁷⁵

While the elements of the debates about proliferation remain largely the same (who will proliferate, why they may proliferate, what are the consequences, etc.), it is the phenomenon of transnational terrorism that has changed the likely sources of proliferation, as well of the methods applied to combat it. Where once the fear of proliferation was about preventing nation-states from using nuclear power in a state-to-state conflict, now the additional fear is that individual actors may influence proliferation to make their own weapons or to help rogue nations. Therefore, the debates and instruments in the non-proliferation regime must change to address these evolving issues; the cause (terrorist) must be attacked and not just the symptom (the attempt to acquire WMD). The application of that result has changed greatly.

⁷⁷⁵ Mowatt-Larssen, "Nuclear Security in Pakistan: Reducing the Risk of Nuclear Terrorism."

2. International Norms

Normative behavior may also be a factor. All these international norms have, of course, been violated at times by certain states that had pledged to uphold them. Norms do not shape the behavior of all states or individuals, but they do shape that of some. They also provide a basis for which to disallow persons or groups not a nation-state from ever legally pursuing the development for capabilities. Preventing acquisition, production, stockpiling, or use of chemical and biological weapons helps stigmatize them for states, as well as individuals and rogue groups. Norms do not determine outcomes; they shape the realms of possibility. They influence (increase or decrease) the probability of occurrence of certain courses of action. For example, the nuclear taboo, by delegitimizing a particular occurrence of certain course, decreased the likelihood that nuclear weapons will be used.⁷⁷⁶ A nation that evades global norms creates a precedent that others might follow. However, if the non-proliferation regime is based on these paradigms, they are inefficient to cover the new threats emerging in the proliferation rules.

Constructivists argue that states embrace international institution out of a “desire to conform to shared ideas and norms of behavior.”⁷⁷⁷ An individual international institution is an array of interrelated norms that embody behavior for actors with a given identity. In this case, the norm of non-proliferation is an extension of the “nuclear taboo, “a norm against the use of nuclear weapons which has stigmatized nuclear weapons as acceptable weapons.”⁷⁷⁸

⁷⁷⁶ Nina Tannenwald, “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,” *Journal of International Organization* 53, no. 3 (Summer 1999): 433–468; Nina Tannenwald, *The Nuclear Taboo* (New York, NY: Cambridge University Press, 2007).

⁷⁷⁷ Andrew Moravcsik, “The Origins of Human Rights Regimes: Democratic delegation in post-war Europe,” *International Organization* 54, no. 2 (Spring 2000): 217–252.

⁷⁷⁸ Tannenwald, “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,” 433–468. For full discussion, also see Robert I. Brown, “International Nonproliferation: Why Delegate to the International Atomic Energy Agency?” in *Causes and Consequences of Nuclear Proliferation*, ed. Robert Rauchhaus, Matthew Kroenig and Erik Gartzke (New York: Routledge, 2011).

3. Unfortunate Stovepipes in Nonproliferation and Counterterrorism

Since nonproliferation can, and will, have an impact on domestic homeland security measures, nonproliferation targeted toward terrorism must be part of a comprehensive foreign policy. Doing so will protect both homeland security and national security efforts. Plenty of documents detail both the threats of nuclear terrorism, as well as how to stop the dangerous proliferation of nuclear weapons and other WMD. The problem is that both camps are stovepiped. On one side of the debate is the non-proliferation regime, which was developed to monitor nuclear programs in nation-states. Under this paradigm, terrorism and nuclear threats from non-state actors almost appears to be an afterthought. Even after the international community officially recognized non-state actors as a threat, the core documents have not changed. It still assumes that if nations are prevented from building illicit programs, the results will also stop proliferators. That is an oversimplification of the problem and certainly its solution.

On the other side, terrorism is rarely considered in the context of other foreign policy issues. Counterterrorism recognizes the threat of transnational terrorism but WMD terrorism, and in particular, nuclear terrorism is often discounted as being too low probability because of the technical hurdles and steps to be able overcome by a terrorist to be a “real” concern. The danger is that proliferation via terrorist is left to an amorphous global authority, with few teeth, many holes, and an assumption that the concern can be effectively dealt with via with state norms.

The solutions seem to examine the issue from one side to the exclusion of the other, rather than as part of a comprehensive strategy. WMD terrorism is not wholly different but because of the materials needed to achieve it, it does have a uniqueness it controls, in the sharing of intelligence and in the international protocols. Until now, WMD terrorism has been dealt with not as a new threat with unique dynamics but as part of an old dynamic. The policy discussions that have occurred have thus failed to be translated into achievable policy reform.

Terrorist scholars and nonproliferation experts come at the same problem from different directions but neither follow the continuum far enough to hit the critical nexus. As one leading nuclear scholar summarized,

One of the fundamental deficiencies in most governmental and non-governmental analysis display familiarity with both domains, and much of what passes for analysis is particularly shallow in treating the diversity of terrorist types, their motivations and the means available for affecting the tactical and strategic calculations of terrorists.⁷⁷⁹

Nonproliferation targeted toward terrorists must be part of foreign policy. Doing so will protect not only foreign policy objectives but also homeland security objectives by making it possible to leverage critical opportunities to enhance both diplomatic and security efforts—at home AND abroad. Neither should be abandoned but should be expanded.

The need for policy integration in the national security is echoed at the highest levels of government and academia. One leading expert, Paul Stockton, asserts that the integration of domestic and international components of security policy is necessary, albeit complicated.⁷⁸⁰ He highlights this theory in examining the challenges to institutionalize the role the HSC (created to develop policies and integrate U.S. homeland security institutions) with the work of the NSC since the roles are distinct and yet aligned. He also argues that homeland security fundamentally differs from national security in that states and localities play the leading role in many homeland security missions, as opposed to federal agencies that make “vertical” integration,⁷⁸¹ as well as “horizontal” integration⁷⁸²—difficult.⁷⁸³

⁷⁷⁹ William C. Potter, rev., “Using Murphy’s Law Against Nuclear Terrorists,” on *Nuclear Terrorism* by Michael Levi, Harvard University Press, November 2008, *Arms Control Today*, April 2008, 224.

⁷⁸⁰ Stockton, “Beyond the HSC/NSC Merger: Integrating States and Localities into Homeland Security Policymaking.”

⁷⁸¹ Ibid. In this case, the author defines “vertical integration” as policy integration between state, local, and federal governments.

⁷⁸² Ibid. In this case, the author defines “horizontal integration” as policy across the federal bureaucracy—difficult.

⁷⁸³ Stockton, “Beyond the HSC/NSC Merger: Integrating States and Localities into Homeland Security Policymaking.”

Defending the nation against terrorism can and should relate to other foreign policy objectives, such as controlling WMD. This new framework will support nonproliferation by including tools from the counterterrorism world and vice versa. This challenge is apparent, in not just overall security policies, but can be applied in the case of non-proliferation policies, specifically, especially when looking at the implementation.

National security policies rarely depend on state and local implementation; DoD and other federal departments carry them out. In contrast, state and local governments (and police, firefighters, public health workers, and other professionals they employ) are absolutely vital to homeland security, making vertical coordination more important as a consequence.⁷⁸⁴

John Brennan, President Obama's key advisor for on homeland security issues has echoed concerns in the need to be able to use "the full range of our foreign policy tools" in dealing with threats to U.S. national security and the terrorism.⁷⁸⁵

He explains the strategy by saying that the approach recognizes "that our counterterrorism efforts clearly benefit from—and at times depend on—broader foreign policy efforts, even as our Counter-Terrorism strategy focuses more narrowly on preventing terrorist attacks against our interests, at home and abroad."⁷⁸⁶ In explaining the 2011 counterterrorism strategy, John Brennan emphasized the important connection between counterterrorism strategies.

Our strategy recognizes that our counterterrorism efforts clearly benefit from—and at times depend on—broader foreign policy efforts, even as our CT strategy focuses more narrowly on preventing terrorist attacks against our interests, at home and abroad."⁷⁸⁷

⁷⁸⁴ Stockton, "Beyond the HSC/NSC Merger: Integrating States and Localities into Homeland Security Policymaking."

⁷⁸⁵ John Brennan, Reprint of Speech at John Hopkins University, *SAIS Review* 28, no. 1 (Winter/Spring 2008): 157–158; *SAIS Review*, June 29, 2011.

⁷⁸⁶ Ibid.

⁷⁸⁷ White House, Press Office, *Remarks of John O. Brennan, Assistant to the President for Homeland Security and Counterterrorism, on Ensuring al-Qa'ida's Demise (As Prepared for Delivery)* (Washington, DC: Paul H. Nitze School of Advanced International Studies, June 29, 2011).

4. Bridging the Gap

It will take cooperation, collaboration, and approaches across multiple disciplines—and between countries—to develop a “web of preparedness” to protect dangerous proliferation that may lead to terrorism. The current challenges require a rethinking of terrorism and efforts to prevent it. The task will require the combined efforts of the foreign policy, nonproliferation, and terrorism specialists in government *and* academia. Strengthening the linkages will help to close gaps and to leverage fully all the resources possible. Strategic thinking in the post-Cold War era must account for the unconventional power of non-state actors willing to violate norms and who may be immune to traditional tools of diplomacy and enforcement.⁷⁸⁸ Efforts, such as UN Resolution 1540 and the PSI, are a significant start. However, these and subsequent efforts should examine the relations of these activities, not only within an international framework, but also within the activities of national efforts of DHS and DNDO in a way that drive the U.S. government closer to a global strategy for counterproliferation, instead of stovepiped domestic and international strategies.

A true overhaul of counterproliferation policy would aim to eradicate the threat of nuclear terrorism, but would also include heavier emphasis on chemical and biological threats and would aim to contain the scale of the most likely forms of bioterrorism and heavily monitored chemical supplies. It would revamp outdated arms control agreements, expand counterproliferation programs in the Pentagon and DHS, and improve the way intelligence on WMD is collected and analyzed. Finally, it would develop coherent strategies for heading off the most pressing nuclear proliferation threats: Iran, North Korea, and Pakistan (and the quickly escalating Syrian threat) where the transfer of materials expertise, or lack of control, may occur. Solutions must be multi-layered and account for multiple contingencies or scenarios not yet fully plan for or recognized.

⁷⁸⁸ Crenshaw, “Terrorism, Strategies and Grand Strategies,” in *Attacking Terrorism: Elements of a Grand Strategy*, 75.

The benefits to linking the areas of non-proliferation and counterterrorism are varied and include the following.

- Leveraging all tools of international power—legal, economic, diplomatic, and security against a common threat
- Strengthening norms by galvanizing the international community against a common goal with consistent policies
- Shoring up gaps that can be exploited by terrorists; thereby, preventing potential terrorist (and or rogue nations) from slipping through the cracks of international law or export controls
- Securing source materials and weaponry across the globe making it highly difficult for terrorists to be successful and may even dissuade terrorists from pursuing WMD materials
- Providing better information sharing protocols to better prevent or interdict WMD threats
- Enhancing this nation's overall ability to detect and disrupt terrorist and proliferation networks involved in illicit activity
- Augment this country's overall ability disrupt terrorists attacks of all types in the planning stage

B. PROLIFERATION THROUGH THE TERRORIST'S EYES: LEVERAGING OPPORTUNITIES TO DEFEAT THE ENEMY

1. The New "Red Line"

The use of the term "red line" is not new in WMD circles, especially in the field of nonproliferation. The red line represents key milestones in the development of a weapons program. Proliferation is a process by which countries move closer to, or away from, different thresholds toward developing the bomb. Recent years have witnessed the steady erosion of nonproliferation "red lines" as the United States has been unable to prevent hostile proliferators from crossing key technological thresholds in the nuclear area. North Korea's nuclear test and Iran's uranium enrichment are prominent cases in point. Countries will not necessarily stay solidly in one state of "nuclear latency" or another, as internal and external conditions that fuel or suppress proliferation may change over time.⁷⁸⁹ As "lines are drawn," countries may progress from exploring a program, to

⁷⁸⁹ Alexander Montgomery and Scott Sagan "The Perils of Predicting Proliferation," *Journal of Conflict Resolution* 52, no. 2 (April 2009): 308–309.

building a technical capability, to the enrichment of fuel, to weaponsization, and finally, to the testing of a weapon.

Recently, President Obama has used the term in regards to Syria. In the summer of 2012, Barack Obama talked about “red lines” for Syria’s chemical weapons.⁷⁹⁰ In a press conference, the President warned Syria’s leader, Bashar Assad, that the United States was prepared to act if Assad began to move his chemical weapons as a precursor to their use. “We cannot have a situation where chemical or biological weapons are falling into the hands of the wrong people.”⁷⁹¹ He added, “A red line for us is we start seeing a whole bunch of chemical weapons moving around or being utilized.”⁷⁹²

Perhaps, red lines are not useful as the public prophetic pronouncements of action as of late. The concept of red lines may be most useful in helping to determine the real capability of a terrorist group’s program and its ability to pose a threat. Being able to decipher intent (i.e., desire) from an actual capability by understanding its ability technological and logistical ability to develop program may be useful in intelligence circles. The understanding of a group in the process is key to being able to focus the intelligence community’s attention to the clear and present threat by focusing on those truly pursuing WMD capabilities.

2. Interrupting the Chain of Causation

Graham Allison’s famous quote stated, “It is a basic matter of physics: without fissile material, you can’t have a nuclear bomb. No nuclear bomb, no nuclear terrorism.”⁷⁹³ While technically accurate, and highlighting the single biggest effort to stop the threat, it fails to examine other opportunities to stop attack and relies solely on a single step in the process. It also leaves out the chemical materials that have different

⁷⁹⁰ Anne Gearan and Karen DeYoung, “Obama’s ‘Red Line’ Warning to Syria on Chemical Arms Draws Criticism,” *Washington Post*, August 21, 2012.

⁷⁹¹ Mark, Landler, “Obama Threatens Force Against Syria” *New York Times*, August 20, 2012. See also Peter Baker and Michael R. Gordon, “U.S. Warns Syria on Chemical Weapons,” *New York Times*, December 3, 2012; David Sanger and Eric Schmitt, “Syria Moves Its Chemical Weapons, and U.S. and Allies Cautiously Take Note,” *New York Times*, December 2, 2012.

⁷⁹² Landler, “Obama Threatens Force Against Syria.”

⁷⁹³ See Allison, “How to Stop Nuclear Terror,” 64.

control systems and very legitimate uses on the marketplace. By adopting a single point-of-failure (or success) strategy, the chances for intervention are limited.⁷⁹⁴ The motivations of terrorist and the opportunities created by globalization are too great to put all WMD efforts in a single strategy.

In his book, *On Nuclear Terrorism*, Michael Levi discusses his theory that underlying his concept of defense as a system is the premise that for a defense against nuclear terrorism to be effective, it only needs to succeed at one stage in the terrorist chain of events.⁷⁹⁵ In contrast, the terrorist must successfully complete each step in the plot to acquire fissile material or an intact nuclear explosive, fabricate a nuclear weapon, deliver the weapon to the target, and detonate the explosive.⁷⁹⁶ Although any element or layer of defense may be relatively ineffectual, Levi argues that a carefully conceived and integrated, multilayered defense stands a much better chance of obstructing a nuclear attack than may at first appear to be the case.⁷⁹⁷

This approach leads Levi to what he calls “Murphy’s Law of Nuclear Terrorism,” what can go wrong (from a terrorist’s perspective) might well go wrong.⁷⁹⁸ In other words, understanding the various ways in which terrorists might fail provides insights and potential tools for increasing the odds of terrorist failure. This perspective, in turn, suggests the importance of understanding both terrorist capabilities and their attitudes toward risk and failure. Although any element or layer of defense may be relatively ineffectual, Levi argues that a carefully conceived and integrated, multilayered defense stands a much better chance of obstructing a nuclear attack than may at first appear to be

⁷⁹⁴ Levi, *On Nuclear Terrorism*.

⁷⁹⁵ Ibid. On Levi’s on his theory of success. See also William Potter’s review of “On Nuclear Terrorism” at Potter, rev., “Using Murphy’s Law Against Nuclear Terrorists,” at www.armscontrol.org/act/2008_04/BookReview.asp#1.

⁷⁹⁶ Levi, *On Nuclear Terrorism*.

⁷⁹⁷ Ibid.

⁷⁹⁸ Ibid.

the case.⁷⁹⁹ “Levi’s study adopts a systems analysis perspective to demonstrate the power of an integrated, multilayered defense.”⁸⁰⁰

Identifying these vulnerabilities and potential for failure provides an easier path to identify prevention tools to increase the odds of terrorist failure. A disruption to any one of the steps in the chain could make a terrorist WMD plot susceptible to detection; thus, giving multiple opportunities to stop a potential plot. These defensive steps should be thought about in the context of the nonproliferation framework to identify innovative comprehensive measures. This perspective, in turn, suggests the importance of understanding both terrorist capabilities and their attitudes toward risk and failure. Doing so may help develop more effective deterrents in the non-proliferation and counterterrorism regimes.

Chapter IV of this thesis includes an examination of the seven steps necessary for a terrorist group to undertake successfully to execute a nuclear attack including possible opportunities created by globalization for terrorists to exploit should they choose to pursue WMD terrorism. However, those same seven steps allow opportunities to defeat terrorism in each individual step of the process to maximize impact on prevention.⁸⁰¹ By looking closely at the nuclear “chain of terror,” it is possible to determine at what point to apply risk reduction measures and defensive strategies most effectively;⁸⁰² essentially, completing the cycle of motive, mean, and opportunity. By interrupting that cycle, an attack is either defeated by interdiction and enforcement or by dissuading them from attempting to cross the “red line.”

This section revisits the seven steps to a terrorist attack and looks at how to apply measures that may mitigate and stop an attack.

⁷⁹⁹ Levi, *On Nuclear Terrorism*.

⁸⁰⁰ Ibid.

⁸⁰¹ Aside from acquiring WMD material, these are the same steps used in all forms of terrorist attacks.

⁸⁰² It is important to note these steps may happen simultaneously. Similarly, the prevention measure will also have a cross-over effect and are not limited to step-by-step implementation.

- Steps 1 and 2
 - The terrorist group must decide to embrace violence to achieve its goals
 - The group must then choose to acquire CBRN weapons to advance its objectives

While certainly not limited to WMD terrorism, it is crucial to continue to bolster knowledge of how jihadits use the Internet to recruit and radicalize. Analysts must build a better understanding of why groups would choose WMD over more conventional weapons for attack. When conventional weapons are available, the analyst must ask why might terrorists choose this more technically complicated approach. Intelligence collection is extremely important at this stage. The distribution (intelligence sharing) of that information through the international network is also critical. One RAND report surmised, “These weapons may be desirable for certain groups, such as Aum Shinrikyo, that have “latched on to CBRN materials,” or are advantageous for groups that already have a reliable source of conventional weapons. Alternatively, some groups, such as al Qaeda, may believe that CBRN weapons also have an intrinsic value and therefore may be more inclined to acquire.”⁸⁰³

A more accurate understanding of a group’s intent and capabilities will make it possible to allocate resources appropriately. Without discounting the WMD threat, one expert cautions the importance of recognizing the “nuances, distinctions and developments between and within groups that precipitate the use” of WMD, which is sometimes left out of the analysis of determining the threat.⁸⁰⁴ A better understanding of groups’ dynamics and decision making will help analysts to better understand where to focus concern and direct subsequent efforts.

Terrorists’ innovation processes should be disrupted.⁸⁰⁵ Being able to understand the motivation of al Qaeda and other groups can help nations better disrupt, defend

⁸⁰³ Kim Cragin and Sara A. Daly, *The Dynamic Terrorist Threat: An Assessment of Group Motivations and Capabilities in a Changing World* (Santa Monica, CA: RAND Corporation, 2004), 45.

⁸⁰⁴ Brannan, Esler, and Strindberg, “Talking to “Terrorists”: Towards an Independent Analytical Framework for the Study of Violent Sub-state Activism, “3–24.

⁸⁰⁵ Martin C. Libicki et al., *Getting Inside the Terrorist Mind* (Santa Monica, CA: RAND Corporation, 2007), http://www.rand.org/pubs/research_briefs/RB9258, 1.

against, and prepare for and anticipate terrorist attacks. Greater familiarity with the range of terrorist behavioral patterns, preferred types of weapons, and delivery methods will aide in the development of the most effective countermeasures and consequence management. By disrupting this transfer of technological information process, it is then possible to stop the escalation of technological thresholds needed to gain WMD capability.

RAND studies the group dynamics to understand better what made for successful knowledge and technology exchanges as a way of determining vulnerabilities in these exchanges by focusing on how terrorists try to get around defensive technologies, share technologies among themselves, and prioritize their targets, gains or costs in operational capabilities.⁸⁰⁶ By preventing technology exchanges, and thereby, disrupting the technological innovation, terrorists are left with only *desire* to use WMD, but no *capability*.

For example, governments have provided safe havens as incentives to get terrorists to participate in peace negotiations, but such safe havens facilitate technology transfers. Tightening porous borders can also help disrupt technology exchanges.

Policies Should Disrupt Trust Among Terrorist Groups.

- Step 3
 - The group must obtain the materials, such as chemicals, biological agents radioactive sources, or weapons-usable nuclear materials, to make CBRN weapons

In recent years, notable progress in ensuring that stockpiles of the essential ingredients of nuclear weapons around the world are secured from theft and transfer to terrorists have ensued. In the chain of causation, the most difficult challenge for a terrorist organization would most likely be obtaining the fissile material necessary to construct an improvised explosive device (IND). Terrorists could attempt to exploit many acquisition routes most likely through an illegal purchase, theft, diversion. Or force. Or perhaps even by chance during a time of political turmoil, including one brought on by a coup or revolution. In 1989, South African dismantlement program (under the auspices of

⁸⁰⁶ Libicki et al., *Getting Inside the Terrorist Mind*, 2.

IAEA) eliminated the weapons in the country and led to the subsequent treaty of Pelendaba and the government's ascension into the NPT. Historically, the greatest emphasis has been on developing programs to secure the material through Cooperative Threat Reduction (CTR) programs, such as those in Russia that lessen opportunities and stop the threat at the source. The Nunn-Lugar program has successfully reduced the number of stockpiles and "loose nukes" in the former Soviet Union. As many experts have said, securing the materials offers the single strongest factor in preventing nuclear terrorism.⁸⁰⁷ These programs with demonstrated effectiveness must continue. Yet, despite these proven successes, these collaborative efforts have not been afforded the financial resources or political support they warrant.⁸⁰⁸ At funding levels of just over \$1 billion annually,⁸⁰⁹ the return on investment on the cooperative nonproliferation programs has been incalculable—not only in terms of weapons destroyed, but in potential terrorist incidents averted.

A number of other promising approaches have reduced the risk of fissile material leakage, including the minimization or elimination of HEU use in the civilian nuclear sector. With the growth for energy, more so in the civilian sector, and may include a number of countries. Stricter controls are needed.

Additionally, to deal with the problems of smuggling and terrorism, focus on programs directed at smaller quantities and facilities outside of weapons and energy plants is also needed.⁸¹⁰ The Department of Energy's National Nuclear Security Administration (NNSA) plays a key role in the U.S. government's comprehensive effort to combat terrorism. Since 2001, NNSA has doubled spending on nuclear nonproliferation programs and has received nearly \$45 million in contributions from

⁸⁰⁷ This step is written about extensively in the works of Graham Allison, William Potter, and Michael Levi.

⁸⁰⁸ Finlay and Turpen, *25 Steps to Prevent Nuclear Terror: A Guide for Policy Makers*, 86.

⁸⁰⁹ Ibid.

⁸¹⁰ Quantities found at these locations will not be weapons-grade HEU or plutonium but may include bi-products or other dangerous radioactive materials more likely appropriate for use in a radioactive dirty bomb.

seven countries.⁸¹¹ Among its successes, NNSA claims to have recovered 22,674 unwanted or excess high-priority radioactive sources in the United States and upgraded the physical security at 598 vulnerable buildings around the world that contained high-priority nuclear and radioactive material.⁸¹² However, while it is known that the United States is looking closely at security material within its own country, records of other nations internal efforts are inconsistent and varied.

Were we able to secure all nuclear weapons and materials, there would be no need for a broader effort to prevent nuclear smuggling. Security at the source, including, most prominently, cooperative threat reduction, is the most powerful tool available, and would benefit from increased investment and attention. But it will never be sufficient alone.⁸¹³

Despite numerous programs to secure materials at the source, it is necessary to concentrate on the other points of vulnerability, as well to identify other opportunities to lessen the other factors.

- Steps 4 and 5
 - Next the terrorist must acquire the requested technical skills and knowledge either through learning or buying the services of technical experts
 - Then the terrorist group must combine the knowledge and skills with the CBRN materials to build effective weapons

As has been stated throughout this thesis, technical expertise is one of the greatest inhibitors to a terrorist group to obtain and launch a WMD. The technological threshold required for a successful attack is very high. Obtaining the necessary material and expertise and fashioning the two into a weapon is not a simple operation, even with the right material and equipment.

Most analysts have assumed that to accomplish this task, the terrorist group in question would have to assemble a small team of specialists with expertise in such varied areas as nuclear physics or engineering, metallurgy, machining, and conventional

⁸¹¹ NNSA, "Fact Sheet: Working to Prevent Nuclear Terrorism," September 9, 2009, <http://nnsa.energy.gov/mediaroom/factsheets/preventingnuclearterrorism>.

⁸¹² Ibid.

⁸¹³ Levi, "U.S. Efforts to Detect Smuggled Nuclear Weapons."

explosives. However, as discussed in detail in a later section, building the simplest type of IND, a gun-type device, might not require a large technical team.⁸¹⁴

Globalization is helping make the trade in materials, and know how possible.

If the subject matter expertise can be prevented and protected, terrorist groups can be prevented from being able to execute an attack. The very trends driving globalization—improved communications and transportation links—can enable the development of extended proliferation networks that may facilitate the terrorist acquisition of WMD. Globalization requires that partner nations work together closely to prevent, detect, and disrupt linkages that may develop between terrorists and facilitators, such as A.Q. Kahn.

The United States has made an effort to engage more than 16,000 personnel at over 180 facilities in the former Soviet Union, Libya, and Iraq to help redirect their talents to civilian pursuits while preventing the flow of WMD expertise to countries of proliferation concern and terrorist groups.⁸¹⁵ Efforts to stabilize employment for nuclear personnel helps make them less vulnerable to financial incentives from terrorist groups and rogue nations looking to build illicit weapons. However, these experts travel and transfer data, another opportunity.

In the planning stages of an attack, its members appear to travel frequently for training, planning meetings, or to conduct specific attacks. Thus, the cases⁸¹⁶ demonstrate that as a terrorist group expands the sophistication of its attacks, as well as its reach, it requires a parallel expansion of funds. Furthermore, these funds can be used to both sustain the terrorist group's operational capabilities and help fulfill its organizational requirements.⁸¹⁷

⁸¹⁴ Charles D. Ferguson and William C. Potter, *Improvised Nuclear Devices and Nuclear Terrorism*, The Weapons of Mass Destruction Commission, 2005, 7.

⁸¹⁵ NNSA, "Fact Sheet: Working To Prevent Nuclear Terrorism."

⁸¹⁶ This case study "Dynamics of Terrorist Threat" specifically references Al Qaeda and FARC.

⁸¹⁷ Cragin and Daly, *The Dynamic Terrorist Threat: An Assessment of Group Motivations and Capabilities in a Changing World*, 56.

Finally, WMD operations demonstrate the group's significant need for financial resources. Among other requirements, millions of dollars would likely be needed if the group sought to purchase fissile material, bribe, or threaten members of security forces guarding them, or attack a fissile material storage or processing site.⁸¹⁸ The money it would take to obtain the expertise and materials is substantial, which gives intelligence and law enforcement communities a huge opportunity to identify activity since building a WMD capability—especially a nuclear capability—will take a substantial amount in financial support. Also, policies, such as blocking payment transfers, can affect a terrorist group's cost-benefit analysis of getting involved in technology exchanges.⁸¹⁹ Finding ways to restrict funding to terrorist groups and to be able to identify activities based upon large expenditures will restrict terrorist groups. Large amounts of money provided in a lump sum do not appear to be a requirement, but rather, a steady stream of income.⁸²⁰ Another key reality is that large sums of money will be involved if a substate group tries to smuggle, buy, and weaponize vulnerable nuclear materials or tries to weaponize biological and/or chemical agents.⁸²¹ The capabilities, global reach, and financial resources of terrorist groups need to be controlled.

While it is true that the steps 3–5 could also be helped by a state sponsor, for which the non-proliferation regime is designed. Bringing some of the tools used in nonproliferation to the counterterrorism mission is the critical gap in non-state actors operating outside the regime and with no diplomatic enforcement capability.

- Step 6
 - The group must next deliver the weapon or weapons to a target, such as a populated city or a place associated with political, military, or economic value

As with all terrorist attacks, this step perhaps creates the greatest vulnerability for terrorist and the greatest opportunity for law enforcement and intelligence officials.

⁸¹⁸ Ferguson and Potter, *Improvised Nuclear Devices and Nuclear Terrorism*, 6–7.

⁸¹⁹ Ibid., “Getting Inside the Terrorist Mind,” 2007.

⁸²⁰ Ibid.

⁸²¹ Michael Ryan Kraig, *United Nations Security Council Resolution 1540 at the Crossroads: The Challenges of Implementation*, The Stanley Foundation, October 1, 2009, 6.

This step involves transporting materials, or possibly a weapon, and involves the movement of terrorists. Monitoring known terrorist travel, export controls, and interdiction efforts, such as PSI or domestic detection, all offer a chance to intervene. Mistakes at this stage are easy and expose the terrorist to the outside world.

Assuming that nuclear terrorists were able to acquire the necessary fissile material and manufacture an IND, they would then have to cross the next barrier to IND use. That is, they would have to find a way to deliver an IND to a target without being caught and stopped. The distance between the point of acquisition and the target could be quite substantial. If the loss of fissile material were detected, a massive hunt for the material would be launched, involving law enforcement and military personnel from many nations, assisted by nuclear specialists that would be accompanied by greatly intensified security over transportation links and points of entry. Every means of delivery, however, exposes terrorists to some risk of discovery.

- Step 7
 - The CBRN weapon must then cause sufficient damage to achieve the terrorist group's political, religious, or other motivational goals

Steps 1–6 all involved steps “left of boom”—in other words, before an actual attack. However, the last step involves issues “right of boom,” or in other words, mitigating the consequences. Although consequence management of a WMD attack is outside the scope of this thesis, it is important to note that such an attack would not be a clear win for terrorists. If successful, for this low-probability event, such an attack would have far-reaching and devastating consequences. Although arguably a detonation would mean failure, a chance for success still exists by mitigating the consequences. Unlike the scenarios in a nation-state conflict in which a nuclear weapons could devastate an entire region, it is a commonly held belief among experts that an IND or other weapons (radiological, biological, chemical) could be contained enough. A well-planned response would help greatly in saving lives but would also lessen the impact of psychological damage of an attack that must include education to the public about the real threat and protective measures.

Any attack may also work against collective conscious that the use of WMD is not acceptable. Such as the response after 9/11, the consequences to Al Qaeda were harsh and severely limited its operational capability. Having a international coalition willing to take action may act to dissuade a group from pursuing this route. Having all the elements of international legal and diplomatic power in place to take swift action becomes critical.

In conclusion, the assumption from the research is that a WMD attack is low-probability, high consequence, and for terrorists, it is not necessarily a first choice and would likely face significant hurdles although the possibility cannot be discounted. In terms of potential proliferators, “there is little confidence that the other networks do not or will not exist or that elements of the Khan network will not reconstitute themselves in the future.”⁸²² Instead, it is necessary to look at the opportunities for multiple points of failure, and enhance defensive measures both in nonproliferation and counterterrorism.

The steps necessary to execute an attack are to create multiple (potential) points of failure for the terrorist. By reexamining the seven steps, it is possible to increase the opportunities to exploit potential failure by leveraging the totality of both nonproliferation and counterterrorism tools. “.....every step and every defensive layer that we put in complicates and adversary’s plan to be able to do this, and gives us other opportunities, to use other means...to try and identify that something may be planned.”⁸²³

C. RECOMMENDATIONS: WHAT WILL CLOSE THE GAP?

The dogmas of the quiet past are inadequate to the stormy present. The occasion is piled high with difficulty, and we must rise with the occasion. As our case is new, so we must think anew and act anew.⁸²⁴

Abraham Lincoln

⁸²² Albright and Hinderstein, “Unraveling the A.Q. Khan and Future Proliferation Networks,” 2005, 112.

⁸²³ Quote by Vayl Oxford, in Steve Coll, “The Unthinkable,” *The New Yorker*, March 12, 2007.

⁸²⁴ Abraham Lincoln, *The President’s Annual Message to Congress (Concluding remarks)*, Washington, DC, December 1, 1862.

Many adopted security procedures form the baseline for protection against the new centuries' threats, but are those that cannot require a paradigm shift in this nation's approach to homeland security and national security. The recommendations put forth in this thesis are intended to address closing the gap between historical efforts in the non-proliferation regime and emerging field of counterterrorism. Several potential solutions are presented to bridge the gap.

1. International Protocols Expanded beyond the Nation State Paradigm

"Weaknesses, gaps, loopholes, failures, inadequacies, and ineffectiveness" have all been terms used to describe aspects of the multilateral treaty regimes' attempts at nonproliferation.⁸²⁵ These shortcomings become increasingly more obvious with regard to non-state actors interested obtaining and using WMDs. New threats require international protocols to be tied to counterterrorism efforts and include the possibility of use by non-state actors. For instance, the NPT, the cornerstone of the non-proliferation regime has limitations as it is based upon the NPT three-legged approach of state-based nonproliferation, technology development, and nuclear disarmament. Likewise, the BWC and CWC make no mention of non-state actors. If these regimes are still the cornerstones, new vehicles to close the gaps must be either modified or found.

These improved protocols must include specific and enforceable stopgap measures not included in traditional vehicles. If the international community's primary response is to secure materials at the source, thereby shoring up supply side export control regime, then it must to be done in a framework that not only honors international norms, but also integrates the counterterrorism mission with the larger foreign policy mission. For instance, the Khan network was able to manufacture centrifuge components, which were eventually exported to Libya. The lack of export control laws in Malaysia meant the transfer went undetected. Proliferators are able to exploit a situation outside the

⁸²⁵ Shefloe, *The Proliferation Security Initiative and United Nations Security Council Resolution 1540: International Law and the World's Recent Efforts to Combat the Proliferation of Weapons of Mass Destruction*, 33.

control of state-based authorities.⁸²⁶ Building a system that recognizes these non-state actors will allow for better mechanisms and diplomatic protocols to stop proliferation networks through intelligence, detection, and interdiction capabilities in the material control chain.

The areas in which the current non-proliferation regime fails to remedy current threats is extensive. Terrorist obtaining materials for a WMD, porous borders, poor export controls, corruption in states in which WMDs may be trafficked, sold or traded, and proliferation from non-traditional supplier states, are all critical issues that fall outside existing regime structures. Leakages and transfers of knowledge and materials are still poorly remedied by the current regime and the obvious lack of compliance is also problematic, as is the treaties' failures to prevent the trading, smuggling and trafficking of WMDs and WMD-related materials. As Iran and Korea continue to undermine proliferation, the focus keeps reverting to stopping proliferation among nation-states and less attention is paid to the new threats of sub-state actors. The gaps created by new threats will be better addressed by expanding the non-proliferation regime outside of the antiquated nation-state paradigm.

2. Fully Align Nonproliferation and Counter Terrorism Measures

At the international level, flaws in the instruments developed to address WMD terrorism threats exist; at the national and regional levels, implementation of WMD security measures is inconsistent. Despite well-intentioned discussion to align efforts, too often that talk does not translate into concrete measures. Proliferation networks, ones that capitalize on globalization and criminal enterprises, fall outside the realm of traditional nonproliferation approaches but whose solutions should be considered as part of the overall non-proliferation regime. Since this situation may be the greatest existing gap, it is essential to determine how to best align both the nonproliferation and counterterrorism agendas. Are these two agendas being approached as separate parts under a single umbrella or parts of the whole?

⁸²⁶ Todd E. Perry, "The Growing Role of Customs Organizations in International Strategic Trade Controls," in *Nuclear Safeguards, Security and Nonproliferation*, ed. James E. Doyle (Burlington, MA: Butterworth-Heinemann Publishing, 2008), 550.

This is not to say that a strategic national missile defense programs' capabilities should be subordinate to countering a WMD policy. The overall national strategy has to articulate and link all aspects of government interest and policy relevant to the two distinct goals of countering nation-state WMD programs and countering terrorist use of CBRN hazards.

Since 9/11 forced this nation to determine how to deal with these new threats, two distinct approaches are currently available, war and law enforcement. From a legal perspective, war and law enforcement are completely separate entities, governed by a completely different set of rules, neither of which is best suited for the current challenge of terrorism. Illicit WMD proliferation can no longer be separated from transnational crime, illicit trafficking, and the criminal consequences of the networked proliferation networks.

The problem is a distinct lack of goal setting. Same fight, different tools, but the common goals must be defined. Fundamentally, it is necessary to define the strategy to counter nation-state WMD programs as distinct from the strategy to counter the terrorist pursuit of WMD,⁸²⁷ which is distinct but interconnected to common goals, and be able to leverage resources on both sides. Nonproliferation is really a continuous line along a single spectrum: failure at either end leads to gaps.

3. Fully Support New and Innovative Approaches Through Aggressive Implementation

At funding levels of just over \$1 billion annually,⁸²⁸ the return on investment on the cooperative nonproliferation programs has been incalculable. As many experts cite, cooperative threat reduction programs may be the single most valuable tool with the greatest tool available to stop weapons and illicit materials from falling into the wrong hands;⁸²⁹ however, with the current climate, it is negligent not to supplement the success of these programs with new and innovative measures and approaches.

⁸²⁷ Mauroni, "A Counter WMD Strategy for the Future."

⁸²⁸ Finlay and Turpen, *25 Steps to Prevent Nuclear Terror: A Guide for Policy Makers*, 8.

⁸²⁹ General research conclusion from Levi, Potter and Finlay and Turpen report.

Two innovative initiatives—The Proliferation Security Initiative and UN Security Council Resolution 1540—were developed post 9/11. These initiatives are certainly the most innovative to try and close the gaps. These measures were the first to recognize and codify the key link between WMD terrorism and nonproliferation but neither is without problems and cannot solve the critical gaps alone.

Resolution 1540 tries to fill gaps in the varying approaches of existing instruments.⁸³⁰ Resolution 1540 requires states to “promote the universal adoption and full implementation, and, where necessary, strengthening of multilateral treaties to which they are parties, whose aim is to prevent the proliferation of nuclear, biological or chemical weapons,⁸³¹” and to “fulfill their commitment to multilateral cooperation, in particular within the framework of the International Atomic Energy Agency, the Organization for the Prohibition of Chemical Weapons, and the Biological and Toxin Weapons Convention.”⁸³² Although the resolution encourages and promotes universal WMD treaty implementation, states not yet a party retain their prerogative not to sign these treaties. The focus of Resolution 1540 is not the treaties per se but the resulting national legislation and regulations that allow taking action against non-state actors.⁸³³

UNSCR 1540 provides a legal, normative, and action-based framework for moving toward technology governance rather than technology denial approaches in nonproliferation.⁸³⁴ Resolution 1540 calls upon all states to “adopt and enforce appropriate effective laws which prohibit any non-state actors to manufacture, acquire, possess, develop, transport, transfer, or use nuclear, chemical, or biological weapons and their means of delivery.”⁸³⁵ However, effective legislation is core in controlling the threat of CBRN, and while Resolution 1540 is an important step toward this goal, legislation

⁸³⁰ Van Ham, and Bosch, “Global Non-Proliferation and Counter-Terrorism: The Role of Resolution 1540 and Its Implications,” 9–20.

⁸³¹ Resolution 1540, Article 8a.

⁸³² *Ibid.*, Article 8c.

⁸³³ Van Ham, and Bosch, “Global Non-Proliferation and Counter-Terrorism: The Role of Resolution 1540 and Its Implications,” 15.

⁸³⁴ United Nations Security Council Resolution 1540, UN SCOR 59th Sess., 4956th Mtg., UN Doc. S/RES/1540 (2004).

⁸³⁵ Resolution 1540.

still needs to be implemented since it seeks to strengthen national criminal law rather than to create international criminal law. By establishing these actions as international crimes and providing a framework within which state parties can exercise jurisdiction over such crimes, changes would be comprehensive, and unified system created for monitoring and eradicating the development, production, acquisition, stockpiling, retention, transfer, and use of WMD.

As with many UN resolutions, enforcement can also be a problem. Compliance is an issue. Enforcement and implementation is still a challenge within the international body.

The PSI is also a groundbreaking innovation in the fight against illicit proliferation but also requires more support from the international community to remain a sustained and viable international approach. The PSI is not without its critics who cite problems of non-transparency, frequency, and a lack of formal structure, as well as a U.S.-dominated venture with a concrete structure under the auspices of the U.N. These types of initiatives mark a significant departure away from old thinking but they will still need collective international political will and additional implementation to be sustained to be a successful part of the culture. As one legal scholar summarizes in his conclusion regarding the PSI approach of international cooperation:

PSI promotes cooperation and intelligence sharing between participating members. The PSI should serve as a model for future cooperation in international affairs. It offers a way to avoid many of the weaknesses inherent in the structure of the Security Council. It promotes global security, cooperation and enhanced intelligence sharing by nation-states. It also strikes an appropriate balance between nation-state sovereignty and international law by preventing the spread of WMD by those who operate outside the community of nations.⁸³⁶ As threats from nations such as North Korea and Iran continue to undermine peace and security in the twenty-first century, the PSI's lack of structure is its greatest asset. As the United Nations struggles to enhance its effectiveness, the PSI offers an

⁸³⁶ Emphasis added.

example of international cooperation by nation-states without the politicization and bureaucracy so prevalent in the global body today.⁸³⁷

Even though today these two international collective agreements are innovative in dealing with the proliferation threat relative to non-state actors, they require continued international focus, and cooperation. Sustainability is also important. More measures need to be introduced to close gaps.

4. Enhanced Detection and Interdiction to Support Source Security Efforts

Securing materials at the source may be the most effective tool in preventing the transfer of illicit materials but nothing is foolproof. Interdiction is a response to the threat, but a line of front-line enforcement must be developed. A new era is emerging, one in which customs and other frontline enforcement organizations are making significant contributions to slow the spread of materials, equipment, and technology required to manufacture WMD.⁸³⁸ Within a growing number of states, the knowledge of complex technology control lists developed by multi lateral nonproliferation export regimes is being distilled into information that customs and other enforcement officers need to identify controlled communities during their inspections. Domestic detection efforts must also be included in these efforts and tied to the global nuclear detection architecture. However, detectors, regardless of how plentiful, have limitations as well. The elements of greatest concern—HEU and plutonium—have a low remittance of radiation and are difficult to detect.⁸³⁹ The next generation needs to be able to decipher. Successful efforts will also require solid, actionable intelligence since searching for these materials can be like searching for a needle in a haystack. Law Enforcement may, by chance, stumble upon a nuclear threat but the odds of a chance detection can be multiplied if it is

⁸³⁷ John Yoo and Glenn Sulmasy, “The Proliferation Security Initiative: A Model for International Cooperation,” *Hofstra Law Review* 32, no. 2 (Winter 2006): 416.

⁸³⁸ Perry, “The Growing Role of Customs Organizations in International Strategic Trade Controls,” in *Nuclear Safeguards, Security and Nonproliferation*, 549.

⁸³⁹ “Radiation Detection,” Lawrence Livermore National Laboratories, *Science and Technology Review*, January/February 2010. See also fact sheet from the Office of the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs/Nuclear Matters (ASD(NCB/NM)) as an Internet Supplement to Draft DoD 3150.08-M, “Nuclear Weapon Accident Response Procedures” (NARP), (n.d.), http://www.acq.osd.mil/ncbdp/narp/Radiation_Data/Radiation_Detection_and_Measurement.htm.

determined what/where/who to be looking for. In short, intelligence multiplies the detection effort.⁸⁴⁰

Detection of not just nuclear material or WMD substances, but also other tools, such as delivery systems and other related material, is also important. PSI exercises have increased national capacities for coordinated detection and interdiction of suspect shipments. In addition, with the United States having successfully negotiated ship-boarding agreements with the countries whose flags fly on the bulk of the world's ships, flag state consent for boarding to search for WMD has become an expectation for and of many states.⁸⁴¹ Most importantly, the PSI has evolved and metamorphosed from a focus on interdiction of ships at sea, to inspection in ports, to carriage of WMD by aircraft, to disruption of financial networks involved or supporting such trafficking.⁸⁴² PSI exercises have increased national capacities for coordinated detection and interdiction of suspect shipments—a novel approach to proliferation, and may for the first time, look into how to change the tactics of proliferators in an attempt to disrupt terrorists. Detection and interdiction opportunities must be created at all points in the terrorist/sub-state actor process to develop WMD capabilities.

5. Improved WMD Intelligence Analysis

Intelligence analysis for WMD threats must be improved. Iraq demonstrated that sufficient intelligence was not available to determine imminent threats accurately. the U.S. government must declassify and demystify the information surrounding WMD issues. It is critical that expertise be improved so that analysts are better able to understand the indicators of illicit activity to include building bridges with the scientific community. Finally, intelligence analysis must focus on whether terrorist groups have the capability to develop and launch a WMD attack, not just intent. To do so, analysts must

⁸⁴⁰ Michael Levi and David M. Rubenstein, *Testimony of Michael A. Levi and David M. Rubenstein, U.S. Efforts to Detect Smuggled Nuclear Weapons*, July 27, 2006, <http://www.cfr.org/technology-and-foreign-policy/us-efforts-detect-smuggled-nuclear-weapons/p11160>.

⁸⁴¹ Mark J. Valencia, "Policy Forum 08-043: Put the Proliferation Security Initiative Under the UN Nautilus Peace and Security (NAPSNet)," May 29, 2008, <http://nautilus.org/napsnet/napsnet-policy-forum/put-the-proliferation-security-initiative-under-the-un/>.

⁸⁴² Ibid.

fully understand the indicators and thresholds of WMD. Proliferation networks operate like companies.⁸⁴³ They must be capable of coordinating a series of logistic, financial and technical functions.⁸⁴⁴ Analysts must understand these networks.

The intelligence community will be most effective at combating chemical, biological, and nuclear threats if it works in concert with non-traditional government partners. Legal and regulatory regimes can help enable better intelligence gathering and disrupt proliferation-related activity.⁸⁴⁵ Better global intelligence on international exports are needed to ensure that contraband items are not being smuggled.

The Robb-Silberman Commission demonstrated substantial evidence that information flows between the federal level and the state, local, and tribal levels—both upward and downward—are not yet well coordinated.”⁸⁴⁶ The finding included problems not just between nations but also within U.S. borders. As more domestic federal, state and local agencies are brought on board with the detection mission, more has to be done.

As the Khan network expanded over many different countries, an effective intelligence sharing system should have been implemented. Improving global proliferation intelligence should be a basic requirement if the intelligence community seeks to stop proliferators like Khan’s network. Due to concerns generated after 9/11, the exchange of intelligence data is improving. However, more formalization is needed among cooperating states. Without good intelligence, initiatives, such as the PSI aimed at combating proliferation, cannot be successful. Nor can issues aimed at detection since trying to find a single source without having some indication as to where to look will most likely be fruitless.

⁸⁴³ Bruno Grusell and Guillaume Schlumberger, “Proliferation Networks: Between Sopranos and Supermarkets,” *Fondation pour la Recherche Strategique (FRS)*, July 2006, <http://www.frstrategie.org>.

⁸⁴⁴ Bruno Grusell and Guillaume Schlumberger, “For a Consistent Policy in the Struggle Against Proliferation Networks,” *Fondation pour la Recherche Strategique (FRS)*, January 4, 2007, <http://www.frstrategie.org>.

⁸⁴⁵ The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, *Report to the President of the United States*, 529.

⁸⁴⁶ *Ibid.*, 280.

Intelligence is important not just in terms of terrorists but also in terms of threats and vulnerabilities, such as which countries may have the largest or most unsecured stockpiles, which nations may be most susceptible to political instability; these nations may be more likely to cooperate or support terrorist seeking capabilities.

In a survey on non-proliferation efforts, intelligence sharing was seen as a key nonproliferation tool by almost all the states surveyed.⁸⁴⁷ (In fact, every state but Iran recognized it as a high or moderate priority⁸⁴⁸) The problem, however, lies in the modalities of cooperation, the number of parties involved, and the manner in and extent to which multinational institutions participate in the process.⁸⁴⁹ Thus, although many countries traditionally have voiced support for the principle of intelligence sharing on nonproliferation matters, it has proved difficult to implement in practice.

Intelligence regarding WMD trafficking has not kept precedent with that of intelligence sharing to combat other conventional forms of terrorism.⁸⁵⁰ The record to date, however, is inconsistent at best, and intelligence sharing among international organizations with responsibility for nonproliferation does not appear to be much better. Although the growing recognition of the threat posed by non-state actors may “remove some barriers to effective intelligence sharing, it remains to be seen how broad-based or enduring such collaboration will be.⁸⁵¹

6. Efforts to Mitigate the Possibility of WMD Terrorism Should Look at the “Chain of Terror” to Determine Where to Most Effectively Apply Risk Reduction Measures

Opportunities can be maximized by looking at them across the spectrum to prevent, interdict, and secure sources. This risk increases the demands that must be placed on security measures for materials at all stages of their use, i.e., production,

⁸⁴⁷ Scott Parrish and William C. Potter, “Nuclear Threat Perceptions and Nonproliferation Responses: A Comparative Analysis,” *The Weapons of Mass Destruction Commission*, n.d.

⁸⁴⁸ Ibid.

⁸⁴⁹ Ibid.

⁸⁵⁰ Ibid., 25.

⁸⁵¹ Ibid.

processing, transportation, and storage, in research reactors, as well as weapons facilities. More must be done preclude terrorists from obtaining materials and components to build WMD. States must eliminate any possibility that terrorists will acquire sufficient materials to build a bomb or successfully attack or take over a facility containing weapons or materials. By determining the steps a terrorist must take to pull off an attack successfully, nonproliferation can be better applied across the entire non-proliferation/counterterrorism spectrum. Building even a crude bomb or delivery system of a WMD is complicated and takes many steps and technological capabilities. It is necessary to see these as opportunities. Nations have been prevented from actually becoming weapons states by stopping them at the critical red line of proliferation. How terrorists view this situation needs to be determined to stop them by preventing hostile proliferators from crossing key technological thresholds in the nuclear area. Efforts must be focused not just on the components of weaponry but also on expertise by securing human capital and expertise, and not just the weapons themselves.

Also critical is deciphering non-state threats, state strategies, and state-focused strategies to counter non-state threats. It is also essential to distinguish between three categories of countries: active sponsors, passive sponsors, and weak or failing states lacking the governmental capacity to control either their territories or sensitive WMD-related technologies and materials.

7. Biological and Chemical Threats Need to Reach Parity with the Emphasis Placed on Nuclear Threats

Despite many recent reports, which cite chemical or biological terrorism as the greatest concern,⁸⁵² much greater emphasis is placed upon nuclear threats. In fact, in reviewing the threats and programs across the spectrum of WMD threats, the predominance of literature and program implementation focuses on nuclear threats rather than chemical or biological.⁸⁵³ The majority of attention is on the nuclear threat and

⁸⁵² See World at Risk Report and Gilmore Commission Report for comprehensive assessments of biological threats. World at Risk, *The Report of the Commission on the Prevention of WMD Proliferation and Terrorism; Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction Charter*, (Gilmore Commission).

⁸⁵³ Assessment based upon author's research and experiences.

destabilizing effect of nuclear proliferation but “the threat from the proliferation of materials and technologies that could contribute both existing and prospective biological and chemical weapons programs is real.”⁸⁵⁴

Beyond HEU or plutonium, the dual-use materials, technologies, expertise, and equipment required to make dangerous biological and chemical agents, are largely indistinguishable from those needed for “normal” scientific advancement, research, and commercial activities.⁸⁵⁵ Thus, export and border (customs) controls will have limitations in detecting truly non-state, transnational threats of extremist terrorism. Making detection of chemical and biological threats is just as critical but less straight forward.

If the United States wants to lead the international community on this issue, it must effectively re-engage its international efforts to halt proliferation through treaties in the area of biological and chemical weapons. The United States should either re-enter the BWC or actively speak out to begin efforts to develop a replacement treaty that better supports legitimate pharmaceutical industry concerns for proprietary protections.

Today’s biothreats are “agile and globally accessible biotechnologies.”⁸⁵⁶ Biosecurity is unique in that it calls for a concerted mitigation effort on the part of numerous communities of interest—all of which are quite disparate, despite the common goals.⁸⁵⁷ To fight biological threats, the nature of the threats—natural, unintended or intended—may be indistinguishable; therefore, perhaps the most important defense or preventive measure is the build-up of effective, resilient, and well-funded public health systems, including prevention and response infrastructure and national coordination with the World Health Organization.⁸⁵⁸ Due to the transient nature of biological threats, risk management and mitigation measures must be coordinated across national boundaries.

⁸⁵⁴ Denis C. Blair, *Director of National Intelligence, Statement for the Record, Annual Threat Assessment of the Intelligence Community for the Senate Select Committee on Intelligence*, February 12, 2009, 18.

⁸⁵⁵ Kraig, *United Nations Security Council Resolution 1540 at the Crossroads: The Challenges of Implementation*, 23.

⁸⁵⁶ This characterization of biosecurity threats was used in the White House web page on Biosecurity, Office of Science and Technology, Biosecurity “The WhiteHouse.webarchive.”

⁸⁵⁷ White House, National Security Council, *National Strategy for Countering Biological Threats*.

⁸⁵⁸ *Ibid.*

Like the BWC, the CWC is also a protocol in need of update. While it can be argued that the CWC has already done a great deal to suppress, if not outright eliminate, the illegal production and use of chemical weapons, it also bans the “development, production, stockpiling, and use of chemical weapons by members signatories” and also requires the destruction of all chemical weapons stockpiles and production facilities.⁸⁵⁹ However, like most the other NPT and BWC, it does not adequately address today’s non-state and sub-state actor threats. The CWC specifically addresses traditional chemical warfare agents, but does nothing about agents developed during the latter years of the Cold War or toxic industrial chemicals capable of easy weaponization for use by terrorist organizations.

Threats and agreements to regulate trading better are needed. Since the CWC extends its provisions to the civilian sector, the impact of inspections, reporting requirements, and export controls on commercial enterprise raises concerns unique to arms control treaties.⁸⁶⁰ Potential loss of information, aka “trade secrets” is of great concern to private industry;⁸⁶¹ therefore, legal trade and commerce must be balanced with measures to reduce the threat of piracy, siphoning for secondary sales to terrorists, or reduced casualties in the event of direct attack by terrorists against the mode of transportation. The global community needs to continue efforts worldwide to lock down precursor chemicals. Detecting illicit transfers of controlled chemicals may also prove a challenging task. Covert production of chemical warfare agents, and the subsequent manufacture of chemical munitions, are higher-profile activities, and consequently, more vulnerable to detection.⁸⁶²

The potential threat of CBW must neither be overhyped nor undervalued. However, they must be paid at least as much attention as nuclear threats and the potential capability of terrorist groups especially given their early attempts to be used against this

⁸⁵⁹ *United Nations Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction*, signed in Geneva, September 3, 1992.

⁸⁶⁰ U.S. Library of Congress, Congressional Research Service, *Weapons of Mass Destruction: The Terrorist Threat*, 6.

⁸⁶¹ *Ibid.*, 10.

⁸⁶² *Ibid.*, 8.

country. The U.S. government planning scenarios tend to focus on those that envision terrorists using 10-kiloton nuclear weapons, large releases of anthrax and smallpox, and extensive use of nerve and mustard agents in heavily populated cities or other worst-case scenarios. These scenarios include the assumption of perfectly executed attacks using large weapons and fully weaponized delivery systems.⁸⁶³ It is also necessary to plan for smaller scale and less perfectly executed attacks.

8. Globalization: Changing the Questions We Ask

Today's world and the security threats being faced have drastically changed in recent years. They have changed not only because the threats have increased but because of the manner in which they are delivered. Terrorism must be fought against a new background of technology, information exchange and interconnectedness. The very questions that need to be asked must change.⁸⁶⁴

The forces of globalization and the way criminal networks operate have changed the very nature of the threat faced. It can be argued that 9/11 was not the deciding moment of change; it was merely the public recognition of the threat. Perhaps the reason for the change was not Al Qaeda or the 9/11 attacks specifically, but was due to technology—because weapons formally restricted to the arsenals of industrialized nation-states are now within reach of small states, and possibly, non-state actors.⁸⁶⁵ Now a terrorist can threaten the world's greatest superpower. This reality changes the paradigm of the very nature of the threat and impacts how the tools needed to address it must be applied. How can the tools be applied on national and international powers to prevent a terrorist from becoming a WMD power?

Organized criminals and groups will increasingly pose a threat to U.S. national security interests by enhancing the capabilities of terrorists and hostile governments. Organized criminal activities frequently involved either networks of interconnected

⁸⁶³ Cameron, "WMD Terrorism in the United States: The Threat and Possible Countermeasures," 163.

⁸⁶⁴ See Larsen, *Our Own Worst Enemy* for a discussion on the concept of changing the questions asked regarding homeland security issues and threats.

⁸⁶⁵ Larsen, *Our Own Worst Enemy*, 4.

criminal groups sharing expertise, skills, and resources in joint criminal ventures that transcend national boundaries, or powerful, well-organized crime groups seeking to legitimize their image by investing in the global marketplace. The use of cyberspace and global financial systems, and political corruption have made it easier for them to hide their involvement, to thwart law enforcement efforts, and to create images of legitimacy.⁸⁶⁶ This new nature of this threat is flexible, dynamic, transnational, and networked, which is fueled by a global economy, as well as the economic realities of globalization.

The questions and answers must change because the nature of the threat has change.

D. CHANGING THE LEXICON OF WMD

Finally, while not included as a formal recommendation, this author finds it necessary to note informally that consideration must be given to the lexicon used to discuss nonproliferation and WMD. In any subject, language is important and provides a way to relate to an issue, but when two areas of expertise use different language to describe, similar—or even exact—concepts, it can lead to confusion. Also, some of the language is outdated or ties to concepts of war and may not be appropriate to the newer counterterrorism issue.

For instance, the terms NBC, CBRN(E), or WMD⁸⁶⁷ are often used interchangeably, although arguably they are not all the same. Not all terms include the radiological threat when addressing the issues, and will aggregate the radiological and nuclear threats; however, they are not the same thing; a gap that is important when examining policies targeted to source security and detection methods. Likewise, chemical, biological, and nuclear threats are discussed interchangeably but methods and issues are very different and require specific nuances, prevention, and detection strategies. Depending upon the researcher, nonproliferation may only specifically include

⁸⁶⁶ 2009 Intelligence Assessment.

⁸⁶⁷ NBC = Nuclear, Chemical or Biological CBRN(E)= Chemical, Biological, Radiological, Nuclear (or Explosive), WMD=Weapons of Mass Destruction.

nuclear proliferation, or it may notionally include CBW as well. The Gilmore Commission deliberately used the term “CBRN” in relation to terrorist capabilities, because it did not believe that “WMD terrorism” was an appropriate descriptor.⁸⁶⁸ The report continued to note that not only does an agreement not exist across the U.S. government of what constitutes a WMD, an agreement on what constitute terrorism does not even exist either.⁸⁶⁹ Often the debate centers on not the means but the impact of the attack, and the argument is that WMD used by a terrorist would not necessarily involve mass casualties or be capable of inflicting “mass destruction” on the level to justify WMD. One expert recommends, “disassociating the term “WMD” from the word “terrorism,”“ because it would “immeasurably improve the effectiveness of a “counter-WMD terrorism” strategy.⁸⁷⁰

In an article, Albert Mauroni clarifies his use of the terms, “NBC weapons as those weapons developed by nation-states for use on the battlefield to cause significant casualties,” while “CBRN materials involve the use of improvised devices by terrorists, but not necessarily in quantities to cause mass casualties.”⁸⁷¹ However, this definition is not agreed upon nor consistent within the literature. While this author takes the time to define his application of these definitions, most writers, experts, and government reports may not. Definitions for WMD’s are applied not consistently applied throughout the literature. Likewise, terms associated with nonproliferation fail to translate and align with terms now more associated with counterterrorism missions. Consistency is important to bring a common understanding among experts and policy makers.

This language is very important to link to the world of academics in which so much of the debate on nonproliferation occurs. Academia plays a critical role in moving these concepts forward and redefining how to link the issues of non-state actors and counterproliferation issues into the field of nonproliferation. However, in reviewing the

⁸⁶⁸ *WMD Proliferation and Terrorism; Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction Charter, (Gilmore Commission)*, iii–iv.

⁸⁶⁹ Cameron, “WMD Terrorism in the United States: The Threat and Possible Counter Measures,” 162–17.)

⁸⁷⁰ Mauroni, “A Counter WMD Strategy for the Future,” 68.

⁸⁷¹ *Ibid.*

literature, it is clear that these concepts so far do not play a dominant role in the literature. For instance, during a two-week intensive class for Nuclear Threats and Policy, only three hours of the 80-hour curriculum were specifically dedicated to issues of counterterrorism, or non-state actors. Nevertheless, to make real headway, experts and policy makers in both fields need to be cognizant and inclusive of both policy areas.

E. GRAND STRATEGY

Years after the revelations of Al Qaeda's efforts to obtain a bomb, foreign leaders remain unwilling to remove unneeded fissile material and bureaucratic hurdles to implementing or sustaining threat reduction programs, and are complacent about the threat. Diplomatic initiatives to reduce the likelihood of loose nukes could be more accepted if conducted parallel to a strategy that reduces the use of U.S. nuclear materials,⁸⁷² which does not replace the diplomacy upon which non-proliferation regime is built. Sustained diplomacy with countries that have the bomb or bomb-grade fissile materials is an essential ingredient for implementing the review's new guidance.

The 9/11 attacks call for a rethinking of efforts of foreign policy and terrorism specialists in government and academia. Whether the response to terrorism is a set of individual counterterrorist operations, designed for specific circumstances or a general strategy applied to a variety of cases, it must be shaped in terms of a larger conception of American security and interest. Strategic thinking in the post-Cold War world must account for the unconventional power of non-state actors—risk takers who are willing to violate norms and who may be immune to military threat.⁸⁷³

It is critical to accelerate the development and integration of deterrence capacities across the U.S. government. As the National Strategy for Combating Terrorism specifies, “the paradigm for combating terrorism now involves the application of all elements of

⁸⁷² Zenko and Levi, “Three Steps to Reducing Nuclear Terrorism.”

⁸⁷³ Crenshaw, “Terrorism, Strategies and Grand Strategies,” in *Attacking Terrorism: Elements of a Grand Strategy*, 75.

our national power and influence.”⁸⁷⁴ The application of those elements of power seems further advanced in the realm of defeating terrorism than in deterring

F. CHALLENGES AND OPPORTUNITIES

It is clear that since 9/11, considerable progress has been made through these and other efforts to improve the security of nuclear and radiological materials, to strengthen control over these materials, and to expand the norms and measures developed to combat terrorism into the counter-terrorist realm.

However, more needs to be done; on counterterrorism, as well as non-proliferation grounds, to continue to strengthen the NPT by such actions as prompting the universality of additional protocol, by tightening export controls, and by addressing non compliance more vigorously. It is also essential to support the CTR, PSI, GTRI, and other initiative as this should have not only nonproliferation but also counterterrorism benefits. In addition, states should support IAEA efforts to address nuclear terrorism, as well as promote the effective implementation/enforcement of Resolution 1540.

Global approaches will likely continue to be the foundation for any actions, but additional steps will be needed to address new threats adequately.⁸⁷⁵ These efforts are important but as suggested, are only part of the picture (and probably not the most important) All these efforts can reinforce and will be reinforced by other counterterrorism and counterproliferation efforts, including possible efforts to deter, dissuade, and defend against nuclear terrorism. It is necessary to strengthen the regime and deal with outlying problems, including non-compliance. All these efforts being set on national agenda have international implications and must be linked to the international framework. The proliferation regime change has to continue to grow and adapt to the evolving threat. The challenges require a multifaceted response by national governments and international organizations, which cannot be done without actively engaging and leveraging the non-proliferation regime against WMD terrorist threats.

⁸⁷⁴ 2006 *National Security Strategy of the United States of America*, 2.

⁸⁷⁵ Pilat, “Dealing with Proliferation and Terrorism,” in *Combating Weapons of Mass Destruction: The Future of International Nonproliferation Policy*, 19–21.

The normative and legal weight of the regime is important for counterterrorism, as well as nonproliferation, but it will not likely directly affect the behavior of terrorists. Preventing terrorists from achieving their objectives if they attempt to pursue WMD may deter or dissuade them as credible punishment. Absent that, intelligence is needed to stop and interdict threat, and to prosecute those found.

Unfortunately, no matter how much the intelligence community is improved, WMD will most likely continue to pose an enormous threat. Intelligence will always be imperfect and, as history has persuaded, surprise can never be completely prevented. Moreover, it is unrealistic to expect spies, satellites, and analysts to constitute this nation's only defense. As the Robb-Silberman report made clear, all national capabilities—regulatory, military, and diplomatic—must be used to combat proliferation.⁸⁷⁶

The issues of proliferation and counterterrorism should not be considered separate; they should be seen as pieces of a larger puzzle. The hunt for terrorists and WMD proliferation networks should leverage the long-standing traditional diplomatic tools of nonproliferation. However, a multi-faceted, layered defense is needed to address new and emerging WMD threats. While no doubt progress has been made, WMD terrorism still seems as an afterthought on the global non-proliferation agenda. Case in point, was the agenda of the NPT Revision Conference in 2010. It seemed one success was President Obama's nuclear security summit in 2010. However, following the international support and notional commitment to another meeting the following year, another conference has not yet been set. Moreover, despite increased warning that bioterrorism may be the most likely threat, it has failed to gain the attention that nuclear terrorism has. The chemical terrorism threat, although by far the easiest to execute due to fewer restrictions to agents, is only discussed notionally at the international policy level even though the available chemicals can be easily obtained on the open market.

⁸⁷⁶ *The Commission on the Intelligence Capabilities of the United States Regarding Weapons of Mass Destruction, Report to the President of the United States*, 7.

G. AREAS FOR ADDITIONAL RESEARCH

This thesis focused exclusively on the need to link two distinct fields in nonproliferation to bolster counter-terrorism efforts but additional questions require more research. One of the most critical areas is specific in regards to the implementation of the international framework—What would a broad defense framework actually look like and how would it be implemented?

Additionally, more research needs to be done in the area of chemical and biological terrorism. In the WMD realm, a disproportionate amount of the research focuses on nuclear terrorism but what specific measure will help deter chemical and biological attacks? Will focusing on preventing or predominately stopping a nuclear create unintended consequences by pushing terrorists to a chemical, biological or other non-conventional “WMD”?

Finally, in no way does this thesis adequately analyze the legal arguments involved with terrorist cases involving WMD or deal with the legal protections of terrorist subjects. Within the laws of war exist the means for accommodating the changed circumstances that global terrorism presents. Indeed, the manner in which events unfolded after 9/11 suggests that states moved ultimately to a position of applying fundamental principles of international humanitarian law to the unusual circumstances that unfolded.⁸⁷⁷ The events of 9/11 and their aftermath revealed complicated scenarios that do not fit easily into the traditional paradigms of the laws of war, including the 1949 Geneva Conventions. Highly knowledgeable persons in the field have reached diametrically opposite conclusions about certain fundamental issues, such as whether the conflict with Al Qaeda constitutes an “armed conflict” within the meaning of the laws of war, or whether a person who fails to qualify as a prisoner of war under one convention must invariably then qualify as a protected civilian under another. The challenges of proliferation are complicated by the economic realities of globalization and its convergence with international trade.

⁸⁷⁷ Sean D. Murphy, *Evolving Geneva Convention Paradigms in the ‘War on Terrorism’: Applying the Core Rules to the Release of Persons Deemed ‘Unprivileged Combatants’*, 75 Geo. Wash. L. Rev. 1105 (2007).

Branches of the U.S. government continue to struggle to define the contours of constitutional and practical considerations for bringing national security cases. One report found clear evidence that criminal prosecution remains a vital piece of U.S. counterterrorism strategy. Community prosecutors suddenly found themselves operating under a new paradigm. The prosecution of a case was no longer the ultimate objective of an investigation; it was now simply one means of advancing the goal of prevention.⁸⁷⁸ Therefore, the legal instruments involved to deal with terrorist subjects need to be more fully addressed.

H. SUMMARY

The challenges and opportunities for the future of the non-proliferation regime and its nexus with counterterrorism can be summarized by saying that while difficult, they do lend themselves to enduring nonproliferation partnerships to be formalized in international legal regimes and organizations. Only a few key proliferation threats and nonproliferation strategies on which there is broad-based agreement. For example, while Iran and North Korea are widely viewed as the most urgent state-level proliferation threats, major differences among states have occurred regarding the urgency of the threat and the best methods for addressing it.

Divisions over old issues like the pace of nuclear disarmament and force structure will always exist; there is optimism that the international community may do a better job at making headway in a collective fashion in addressing new threats, such as non-state and the proliferation of WMD weapons capability. Preventing a terrorist or non-state nuclear attack within the United States involves more than the detection of the nuclear weapon. A larger system of deterrence, counterproliferation, and response activities are established to address the nuclear threat.

The future of the NPT must include commitments within the evolving perceptions of proliferation threats after 9/11. Since it can function as one of the many lines of defense, the NPT must not be abandoned. Efforts that control proliferation should play a

⁸⁷⁸ Ken Wainstein, "Terrorism Prosecution and the Primacy of Prevention since 9/11," December 14, 2009, <http://www.rooseveltroom.net/wainstein-terrorism-prosecution-and-the-primacy-of-prevention-since-911>.

role in preventing nuclear terrorism. To the extent that the NPT works to prevent an increase in the number of states with nuclear weapons, it decreases opportunities for the emergence of new weapon states with the possibility of inadequate security measures. The international regime is a basis to control materials and sensitive fuel cycle; namely, enrichment and reprocessing.

While it may be too strong to say that the traditional, multilateral non-proliferation regime is obsolete, it is at a turning point if it is to modernize itself to deal with the threats of the modern era. It appears possible that progress can be obtained in several important areas, both within and outside of the formal regime. Setting up an overall policy provides a means of coordinating intelligence actions, repression tools, and interdiction means both nationally and internationally, and therefore, appears as the only viable solution in the struggle against proliferation networks.

The mission of the National Counter Terrorism Center is to “lead our nation’s effort to combat terrorism at home and abroad by analyzing the threat, sharing that information with our partners, and integrating all instruments of national power to ensure unity of effort.”⁸⁷⁹ Non-proliferation efforts are one of the core instruments of national power and need to be fully integrated into the counterterrorism mission. This viewpoint is a departure from the way these policies were implemented a decade ago but the dynamics of the WMD threats, and terrorism in general, require new more integrated and collaborative approaches.

The new normal is an aggressive and sustained approach across multiple sectors; not to the exclusion of other threats, but rather to keep WMD low-probability. Best-case scenario is something worried about at the diplomatic level. To understand warning signs before the attack, “we write with the benefit and handicap of hindsight.”⁸⁸⁰ However, before an actual attack, will it be possible to adequately recognize the WMD threat?

⁸⁷⁹ National Counterterrorism Center, “Strategic Intent,” (n.d), http://www.nctc.gov/about_us/strategic_intent.html.

⁸⁸⁰ *9/11 Commission Report*, 356.

Despite well-intended efforts, the diffusion of nuclear, biological, and chemical weapons remains a very real threat to global security. Without an integrated approach to securing inventories of WMD materials and expertise in the world, the United States will have failed to accomplish its top national security goal to keep the “world’s most dangerous weapons out of the hands of the world’s most dangerous people.”⁸⁸¹

In this second nuclear age, nuclear actors straddle a single spectrum of risks, consisting of states possessing the most advanced nuclear arsenals on one end, to terrorist groups wielding a single crude improvised nuclear device on the other end. The complex transactions between states, states and groups, and groups with other groups must be identified and interpreted in order to identify any clandestine nuclear weapons-related activity that is taking place.⁸⁸²

—Rolf Mowatt-Larssen

⁸⁸¹ White House, “Remarks by President Barak Obama, Hradcany Square, Prague, Czech Republic.”

⁸⁸² Mowatt-Larssen, *Islam and the Bomb, Religious Justification for and Against Nuclear Weapons*, 13.

APPENDIX A. SUMMARY OF NONPROLIFERATION REGIME

Treaties

Treaty on the Non-Proliferation of Nuclear Weapons (NPT)

- Includes provisions to:
 - Prevent the spread of nuclear weapons: Articles I and II prohibit nuclear weapon states from transferring or assisting any recipient in the development of nuclear weapons, and prohibit non-nuclear weapon states from acquiring or developing nuclear weapons;
 - Establish safeguards: Article III requires application of international safeguards to ensure that peaceful nuclear activities in non-nuclear weapon states are not diverted to making nuclear weapons;
 - Promote the peaceful uses of nuclear energy: Article IV recognizes rights to access civilian nuclear technologies under safeguards; and
 - Promote disarmament: Article VI calls for efforts to achieve comprehensive arms control and nuclear disarmament
- Opened for signature on July 1, 1968 in London, Moscow, and Washington
- Entered into force in 1970 with an initial duration of 25 years
- In 1995, the NPT was extended indefinitely, with a review conference to be held every five years
- Signed by 187 countries; only Cuba, India, Israel, and Pakistan are non-parties

Biological and Toxin Weapons Convention (BWC)

- Prohibits the development, production, acquisition, and stockpiling of bacteriological agents and toxins of types and in quantities that have no justification for prophylactic, protective, or other peaceful purposes
- Countries must destroy or divert to peaceful purposes all agents, toxins, weapons, equipment, and means of delivery within nine months after entry into force of the convention
- Signed on April 10, 1972
- Entered into force on March 26, 1975
- Of unlimited duration
- As of June 1999, 162 states have signed the BWC, and 140 have ratified the accord

Chemical Weapons Convention (CWC)

- Prohibits the development, production, acquisition, stockpiling, transfer, and use of chemical weapons
- Each state is required to destroy, within ten years of entry into force, all chemical weapons and chemical weapons production facilities it possesses or that are

- located in any place under its jurisdiction or control, as well as any chemical weapons it abandoned on the territory of another state
- Opened for signature on January 13, 1993
- Entered into force on April 29, 1997
- Of unlimited duration
- As of June 1999, 169 countries have signed the CWC, and 126 have ratified the accord; important non-parties include Egypt, Israel, Libya, North Korea, Syria, and Yugoslavia

Export Controls

Missile Technology Control Regime (MTCR)

- Seeks to control transfers that could contribute to the spread of ballistic and cruise missiles capable of delivering weapons of mass destruction
- Consists of an export control policy and the institutional measures to implement it
- Divides technologies into two categories:
 - Category I: complete rocket and unmanned air vehicle systems capable of carrying a payload of 500 kg or more at least 300 km
 - Category II: lower-risk, often dual-use, hardware and technologies, such as gyroscopes
- Informal, non-treaty association, established April 16, 1987 by the G-7 countries

As of July 1999, there are 32 member states in the MTCR, and additional states have pledged to abide by its guidelines

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APPENDIX B. TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

Date of adoption: 12 June 1968

Place of adoption: United Nations, New York

Date of entry into force: 5 March 1970

(Text of the treaty)

The States concluding this Treaty, hereinafter referred to as the Parties to the Treaty,

Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples,

Believing that the proliferation of nuclear weapons would seriously enhance the danger of nuclear war,

In conformity with resolutions of the United Nations General Assembly calling for the conclusion of an agreement on the prevention of wider dissemination of nuclear weapons,

Undertaking to co-operate in facilitating the application of International Atomic Energy Agency safeguards on peaceful nuclear activities,

Expressing their support for research, development and other efforts to further the application, within the framework of the International Atomic Energy Agency safeguards system, of the principle of safeguarding effectively the flow of source and special fissionable materials by use of instruments and other techniques at certain strategic points,

Affirming the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all Parties to the Treaty, whether nuclear-weapon or non-nuclear-weapon States,

Convinced that, in furtherance of this principle, all Parties to the Treaty are entitled to participate in the fullest possible exchange of scientific information for, and to contribute alone or in co-operation with other States to, the further development of the applications of atomic energy for peaceful purposes,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament,

Urging the co-operation of all States in the attainment of this objective,

Recalling the determination expressed by the Parties to the 1963 Treaty banning nuclear weapons tests in the atmosphere, in outer space and under water in its Preamble to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end,

Desiring to further the easing of international tension and the strengthening of trust between States in order to facilitate the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control,

Recalling that, in accordance with the Charter of the United Nations, States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations, and that the establishment and maintenance of international peace and security are to be promoted with the least diversion for armaments of the world's human and economic resources,

Have agreed as follows:

Article I

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

Article II

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

Article III

1. Each non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing

diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

3. The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.

4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

Article IV

1. Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.

2. All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also co-operate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.

Article V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on a non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear-weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate representation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

Article VI

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

Article VII

Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.

Article VIII

1. Any Party to the Treaty may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to the Treaty. Thereupon, if requested to do so by one-third or more of the Parties to the Treaty, the Depositary Governments shall convene a conference, to which they shall invite all the Parties to the Treaty, to consider such an amendment.

2. Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to the Treaty, including the votes of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. The amendment shall enter into force for each Party that deposits its instrument of ratification of the amendment upon the deposit of such instruments of ratification by a majority of all the Parties, including the instruments of ratification of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. Thereafter, it

shall enter into force for any other Party upon the deposit of its instrument of ratification of the amendment.

3. Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realised. At intervals of five years thereafter, a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty.

Article IX

1. This Treaty shall be open to all States for signature. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force after its ratification by the States, the Governments of which are designated Depositaries of the Treaty, and forty other States signatory to this Treaty and the deposit of their instruments of ratification. For the purposes of this Treaty, a nuclear-weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January 1967.

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession, the date of the entry into force of this Treaty, and the date of receipt of any requests for convening a conference or other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

Article X

1. Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty and to the United Nations Security Council

three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

2. Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.¹

Article XI

This Treaty, the English, Russian, French, Spanish and Chinese texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorized, have signed this Treaty.

DONE in triplicate, at the cities of London, Moscow and Washington, the first day of July, one thousand nine hundred and sixty-eight.

APPENDIX C. PROLIFERATION SECURITY INITIATIVE: STATEMENT OF INTERDICTION PRINCIPLES

Agreed at Paris, 4 September 2003

The Proliferation Security Initiative (PSI) is a response to the growing challenge posed by the proliferation of weapons of mass destruction (WMD), their delivery systems, and related materials worldwide. The PSI builds on efforts by the international community to prevent proliferation of such items, including existing treaties and regimes. It is consistent with and a step in the implementation of the UN Security Council Presidential Statement of January 1992, which states that the proliferation of all WMD constitutes a threat to international peace and security, and underlines the need for member states of the UN to prevent proliferation. The PSI is also consistent with recent statements of the G8 and the European Union, establishing that more coherent and concerted efforts are needed to prevent the proliferation of WMD, their delivery systems, and related materials. PSI participants are deeply concerned about this threat and of the danger that these items could fall into the hands of terrorists, and are committed to working together to stop the flow of these items to and from states and non-state actors of proliferation concern.

The PSI seeks to involve in some capacity all states that have a stake in nonproliferation and the ability and willingness to take steps to stop the flow of such items at sea, in the air, or on land. The PSI also seeks cooperation from any state whose vessels, flags, ports, territorial waters, airspace, or land might be used for proliferation purposes by states and non-state actors of proliferation concern. The increasingly aggressive efforts by proliferators to stand outside or to circumvent existing non-proliferation norms, and to profit from such trade, requires new and stronger actions by the international community. We look forward to working with all concerned states on measures they are able and willing to take in support of the PSI, as outlined in the following set of "Interdiction Principles."

Interdiction Principles for the Proliferation Security Initiative

PSI participants are committed to the following interdiction principles to establish a more coordinated and effective basis through which to impede and stop shipments of WMD, delivery systems, and related materials flowing to and from states and nonstate actors of proliferation concern, consistent with national legal authorities and relevant international law and frameworks, including the UN Security Council. They call on all states concerned with this threat to international peace and security to join in similarly committing to:

1. Undertake effective measures, either alone or in concert with other states, for interdicting the transfer or transport of WMD, their delivery systems, and related materials to and from states and non-state actors of proliferation concern. "States or non-state actors of proliferation concern" generally refers to those countries or entities that the PSI participants involved establish should be subject to interdiction activities because they are engaged in proliferation through: (1) efforts to develop or acquire chemical, biological, or nuclear weapons and associated delivery systems; or (2) transfers (either selling, receiving, or facilitating) of WMD, their delivery systems, or related materials.

2. Adopt streamlined procedures for rapid exchange of relevant information concerning suspected proliferation activity, protecting the confidential character of classified information provided by other states as part of this initiative, dedicate appropriate resources and efforts to interdiction operations and capabilities, and maximize coordination among participants in interdiction efforts.

3. Review and work to strengthen their relevant national legal authorities where necessary to accomplish these objectives, and work to strengthen when necessary relevant international law and frameworks in appropriate ways to support these commitments.

4. Take specific actions in support of interdiction efforts regarding cargoes of WMD, their delivery systems, or related materials, to the extent their national legal authorities permit and consistent with their obligations under international law and frameworks, to include:

a. Not to transport or assist in the transport of any such cargoes to or from states or non-state actors of proliferation concern, and not to allow any persons subject to their jurisdiction to do so.

b. At their own initiative, or at the request and good cause shown by another state, to take action to board and search any vessel flying their flag in their internal waters or territorial seas, or areas beyond the territorial seas of any other state, that is reasonably suspected of transporting such cargoes to or from states or non-state actors of proliferation concern, and to seize such cargoes that are identified.

c. To seriously consider providing consent under the appropriate circumstances to the boarding and searching of its own flag vessels by other states, and to the seizure of such WMD-related cargoes in such vessels that may be identified by such states.

d. To take appropriate actions to (1) stop and/or search in their internal waters, territorial seas, or contiguous zones (when declared) vessels that are reasonably suspected of carrying such cargoes to or from states or non-state actors of proliferation concern and to seize such cargoes that are identified; and (2) to enforce conditions on vessels entering or leaving their ports, internal waters or territorial seas that are reasonably suspected of carrying such cargoes, such as requiring that such vessels be subject to boarding, search, and seizure of such cargoes prior to entry.

e. At their own initiative or upon the request and good cause shown by another state, to (a) require aircraft that are reasonably suspected of carrying such cargoes to or from states or non-state actors of proliferation concern and that are transiting their airspace to land for inspection and seize any such cargoes that are identified; and/or (b) deny aircraft reasonably suspected of carrying such cargoes transit rights through their airspace in advance of such flights.

f. If their ports, airfields, or other facilities are used as transshipment points for shipment of such cargoes to or from states or non-state actors of proliferation concern, to inspect vessels, aircraft, or other modes of transport reasonably suspected of carrying such cargoes, and to seize such cargoes that are identified.

APPENDIX D. UNITED NATIONS SECURITY COUNCIL RESOLUTION 1540 (2004)

Adopted by the Security Council at its 4956th meeting, on 28 April 2004
S/RES/1540 (2004)

The Security Council,

Affirming that proliferation of nuclear, chemical and biological weapons, as well as their means of delivery,* constitutes a threat to international peace and security,

Reaffirming, in this context, the Statement of its President adopted at the Council's meeting at the level of Heads of State and Government on 31 January 1992 (S/23500), including the need for all Member States to fulfil their obligations in relation to arms control and disarmament and to prevent proliferation in all its aspects of all weapons of mass destruction,

Recalling also that the Statement underlined the need for all Member States to resolve peacefully in accordance with the Charter any problems in that context threatening or disrupting the maintenance of regional and global stability,

Affirming its resolve to take appropriate and effective actions against any threat to international peace and security caused by the proliferation of nuclear, chemical and biological weapons and their means of delivery, in conformity with its primary responsibilities, as provided for in the United Nations Charter,

Affirming its support for the multilateral treaties whose aim is to eliminate or prevent the proliferation of nuclear, chemical or biological weapons and the importance for all States parties to these treaties to implement them fully in order to promote international stability,

Welcoming efforts in this context by multilateral arrangements which contribute to non-proliferation,

Affirming that prevention of proliferation of nuclear, chemical and biological weapons should not hamper international cooperation in materials, equipment and technology for peaceful purposes while goals of peaceful utilization should not be used as a cover for proliferation,

Gravely concerned by the threat of terrorism and the risk that non-State actors* such as those identified in the United Nations list established and maintained by the Committee established under Security Council resolution 1267 and those to whom resolution 1373 applies, may acquire, develop, traffic in or use nuclear, chemical and biological weapons and their means of delivery,

Gravely concerned by the threat of illicit trafficking in nuclear, chemical, or biological weapons and their means of delivery, and related materials,* which adds a new dimension to the issue of proliferation of such weapons and also poses a threat to international peace and security,

Recognizing the need to enhance coordination of efforts on national, subregional, regional and international levels in order to strengthen a global response to this serious challenge and threat to international security,

Recognizing that most States have undertaken binding legal obligations under treaties to which they are parties, or have made other commitments aimed at preventing the proliferation of nuclear, chemical or biological weapons, and have taken effective measures to account for, secure and physically protect sensitive materials, such as those required by the Convention on the Physical Protection of Nuclear Materials and those recommended by the IAEA Code of Conduct on the Safety and Security of Radioactive Sources,

Recognizing further the urgent need for all States to take additional effective measures to prevent the proliferation of nuclear, chemical or biological weapons and their means of delivery,

Encouraging all Member States to implement fully the disarmament treaties and agreements to which they are party,

Reaffirming the need to combat by all means, in accordance with the Charter of the United Nations, threats to international peace and security caused by terrorist acts,

Determined to facilitate henceforth an effective response to global threats in the area of non-proliferation,

Acting under Chapter VII of the Charter of the United Nations,

1. *Decides* that all States shall refrain from providing any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery;
2. *Decides* also that all States, in accordance with their national procedures, shall adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them;
3. *Decides* also that all States shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons

and their means of delivery, including by establishing appropriate controls over related materials and to this end shall:

(a) Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage or transport;

(b) Develop and maintain appropriate effective physical protection measures;

(c) Develop and maintain appropriate effective border controls and law enforcement efforts to detect, deter, prevent and combat, including through international cooperation when necessary, the illicit trafficking and brokering in such items in accordance with their national legal authorities and legislation and consistent with international law;

(d) Establish, develop, review and maintain appropriate effective national export and trans-shipment controls over such items, including appropriate laws and regulations to control export, transit, trans-shipment and re-export and controls on providing funds and services related to such export and trans-shipment such as financing, and transporting that would contribute to proliferation, as well as establishing end-user controls; and establishing and enforcing appropriate criminal or civil penalties for violations of such export control laws and regulations;

4. *Decides* to establish, in accordance with rule 28 of its provisional rules of procedure, for a period of no longer than two years, a Committee of the Security Council, consisting of all members of the Council, which will, calling as appropriate on other expertise, report to the Security Council for its examination, on the implementation of this resolution, and to this end calls upon States to present a first report no later than six months from the adoption of this resolution to the Committee on steps they have taken or intend to take to implement this resolution;

5. *Decides* that none of the obligations set forth in this resolution shall be interpreted so as to conflict with or alter the rights and obligations of State Parties to the Nuclear Non-Proliferation Treaty, the Chemical Weapons Convention and the Biological and Toxin Weapons Convention or alter the responsibilities of the International Atomic Energy Agency or the Organization for the Prohibition of Chemical Weapons;

6. *Recognizes* the utility in implementing this resolution of effective national control lists and calls upon all Member States, when necessary, to pursue at the earliest opportunity the development of such lists;

7. *Recognizes* that some States may require assistance in implementing the provisions of this resolution within their territories and invites States in a position to do so to offer assistance as appropriate in response to specific requests to the States lacking the legal and regulatory infrastructure, implementation experience and/or resources for fulfilling the above provisions;

8. *Calls upon* all States:

(a) To promote the universal adoption and full implementation, and, where necessary, strengthening of multilateral treaties to which they are parties, whose aim is to prevent the proliferation of nuclear, biological or chemical weapons;

(b) To adopt national rules and regulations, where it has not yet been done, to ensure compliance with their commitments under the key multilateral nonproliferation treaties;

(c) To renew and fulfill their commitment to multilateral cooperation, in particular within the framework of the International Atomic Energy Agency, the Organization for the Prohibition of Chemical Weapons and the Biological and Toxin Weapons Convention, as important means of pursuing and achieving their common objectives in the area of non-proliferation and of promoting international cooperation for peaceful purposes;

(d) To develop appropriate ways to work with and inform industry and the public regarding their obligations under such laws;

9. *Calls upon* all States to promote dialogue and cooperation on nonproliferation so as to address the threat posed by proliferation of nuclear, chemical, or biological weapons, and their means of delivery;

10. Further to counter that threat, *calls upon* all States, in accordance with their national legal authorities and legislation and consistent with international law, to take cooperative action to prevent illicit trafficking in nuclear, chemical or biological weapons, their means of delivery, and related materials;

11. *Expresses* its intention to monitor closely the implementation of this resolution and, at the appropriate level, to take further decisions which may be required to this end;

12. *Decides* to remain seized of the matter.

APPENDIX E. ELEMENTS OF THE INTERNATIONAL SECURITY FRAMEWORK⁸⁸³

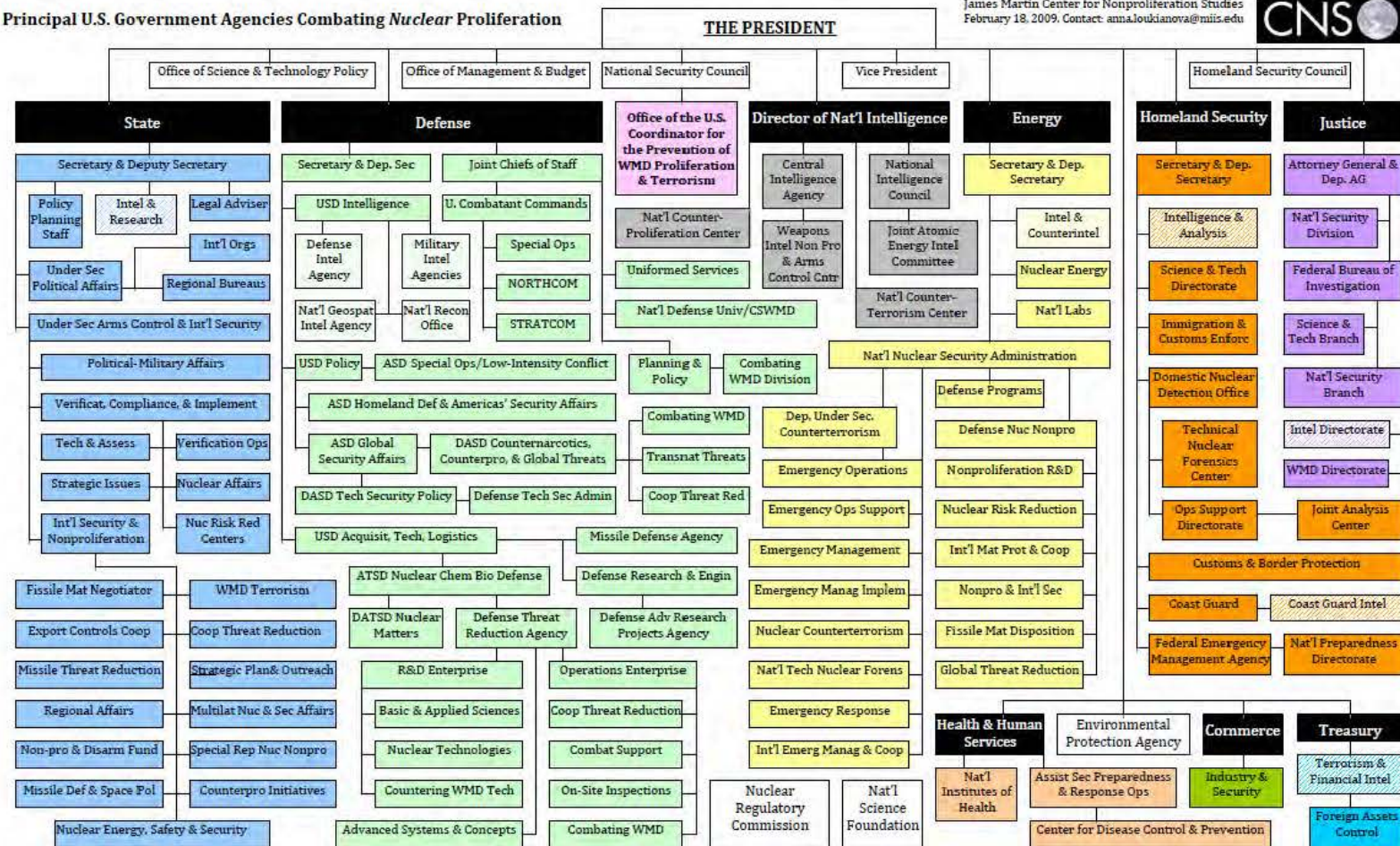
Category	Summary
National Regulations and Procedures	States are responsible for securing their own nuclear stockpiles; requirements and approaches vary widely.
IAEA Recommendations, Guides, and Assistance	IAEA recommendations and guides are the closest thing that exists to international standards for nuclear security, but remain very generally worded. IAEA-led peer reviews and assistance are effective but have occurred at only a small fraction of sites with plutonium or HEU.
Physical Protection Convention and Amendment	The Convention on the Physical Protection of Nuclear Material went into force in 1980 and covered only physical protection during international transport, and criminalization of nuclear theft. The amendment covers domestic physical protection and sabotage, but with very general requirements. Amendment has not yet entered into force as of Fall 2013.
Nuclear Terrorism Convention	Criminalizes nuclear terrorism-related crimes, and requires states to make “every effort” to provide “appropriate” nuclear security.
UNSCR 1373, 1540, and 1887	1373 legally obligates all states to take action against terrorist groups. 1540 legally requires all states to criminalize any effort to help terrorist groups get nuclear, chemical, or biological weapons and requires all states with such weapons or related materials to provide “appropriate effective” security for them, along with “appropriate effective” export and border controls. 1887 calls on—but does not require—states to take a broad range of nonproliferation actions, including securing all nuclear stockpiles within four years.
Threat Reduction Cooperative Agreements	Various programs sponsored by the United States and several other countries have helped improve nuclear security, consolidate and reduce nuclear stockpiles, strengthen interdiction of nuclear smuggling, and more.
G8 Global Partnership	Ten-year, \$20 billion threat-reduction effort launched by the G8 in 2002, now has many contributors beyond the G8, though \$20 billion target has never been reached; principal early focus on chemical weapons demilitarization and sub dismantlement; 2008 summit agreed to broaden effort to global focus; may be extended at 2010 summit.

⁸⁸³ Adopted from Report: Bunn, “Securing the Bomb 2010,” 54.

Category	Summary
Global Initiative To Combat Nuclear Terrorism	Ad-hoc cooperative initiative launched by the United States and Russia in 2006, now has 76 partners. Organizes workshops, exercises, provides forum for discussions, requests for assistance.
World Institute for Nuclear Security	Established 2008, voluntary forum for nuclear security operators to exchange best practices.
Proliferation Security Initiative	Ad-hoc cooperation initiative launched in 2003, focuses on interdicting illicit shipments of nuclear, chemical, biological, or missile technologies.
Police and intelligence cooperation	Ad-hoc cooperation on particular cases related to nuclear theft, smuggling, and terrorism, not yet structured into more formal mechanisms.

APPENDIX F. PRINCIPAL U.S. GOVERNMENT AGENCIES COMBATING NUCLEAR PROLIFERATION

Principal U.S. Government Agencies Combating *Nuclear Proliferation*



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